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(54) **VIEWER TRAFFIC VISUALIZATION PLATFORM**

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See application file for complete search history.

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(56) **References Cited**

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U.S. PATENT DOCUMENTS

6,564,381 B1 * 5/2003 Hodge H04N 7/17336
348/E5.008

D496,666 S 9/2004 Krakirian et al.

(Continued)

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FOREIGN PATENT DOCUMENTS

WO 2012087954 A2 6/2012

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OTHER PUBLICATIONS

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Wikipedia; Audience measurement, Feb. 16, 2015; https://en.wikipedia.org/w/index.php?title=Audience_measurement&oldid=647394712 (10 pages).

(Continued)

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G06T 11/20 (2006.01)
H04N 21/442 (2011.01)
H04N 21/81 (2011.01)
H04N 21/426 (2011.01)
H04N 21/43 (2011.01)
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(52) **U.S. Cl.**

CPC **H04N 21/478** (2013.01); **G06T 11/206** (2013.01); **H04N 21/2402** (2013.01); **H04N 21/42653** (2013.01); **H04N 21/4307** (2013.01); **H04N 21/44222** (2013.01); **H04N 21/64723** (2013.01); **H04N 21/812** (2013.01); **H04N 21/8153** (2013.01)

(57)

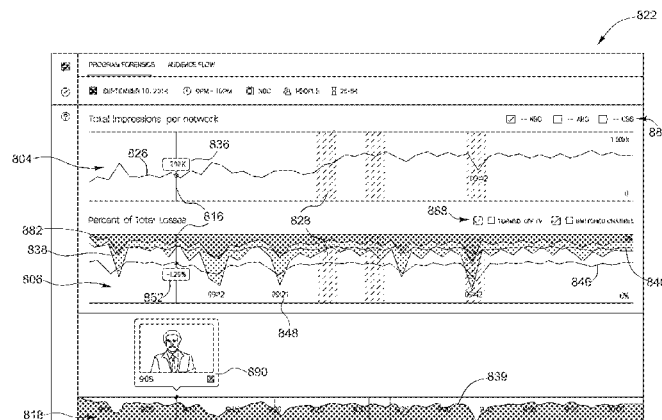
ABSTRACT

An example implementation includes a computer-implemented method including generating a dynamic user-interactable graphical interface using a performance summary including viewer traffic statistics for a first show and competing shows at discrete time intervals, the interface being configured to graphically display a comparison of performance of the first show and the competing shows at the discrete time intervals and provide the interface for display via on the user device. The method may also include receiving a user input selecting from the interface a time interval of the first show and the competing shows and updating the interface with the comparison of the viewer traffic between the first show and the competing shows at the time interval selected by the user input.

(58) **Field of Classification Search**

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27 Claims, 13 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

D652,048 S	1/2012	Joseph	
D692,019 S	10/2013	Baumann	
D711,912 S	8/2014	Allredge et al.	
D717,331 S	11/2014	Lin	
D720,366 S	12/2014	Hiltunen et al.	
8,954,536 B2	2/2015	Kalus et al.	
D729,269 S	5/2015	Trusz et al.	
D745,880 S	12/2015	Lima et al.	
2004/0045024 A1 *	3/2004	Marshall	H04N 5/44543 725/39
2008/0250341 A1	10/2008	Dlugos et al.	
2009/0182614 A1	7/2009	Kekre	
2012/0215621 A1	8/2012	Heffernan et al.	
2013/0282898 A1	10/2013	Kalus et al.	
2014/0095702 A1	4/2014	Kalus et al.	
2015/0121441 A1 *	4/2015	Apte	H04N 5/77 725/109
2015/0289823 A1	10/2015	Rack-Gomer et al.	
2015/0331587 A1	11/2015	Van Der Westhuizen et al.	

OTHER PUBLICATIONS

comSCORE; Video Metrix Multi Platform, 2014; <http://www.comscore.com/Products/Audience-Analytics/Video-Metrix-Multi-Platform> (2 pages).

comSCORE; From TV to Total Video, 2014; <http://www.comscore.com/Insights/Presentations-and-Whitepapers/2014/From-TV-to-Total-Video> (18 pages).

Vector—clock and time icons, [online] posted Jun. 7, 2013, retrieved Apr. 4, 2016, retrieved from http://www.canstockphoto.com/images-photos/hourglass-vector.html#file_view.php?id=14344519.

Wikipedia, "Audience Measurement", http://en.wikipedia.org/w/index.php?title=Audience_measurement&oldid=647394712, Feb. 16, 2015 (10 pages).

Comscore, "Video Metrix Multi-Platform: Showcase the Value and Scale of Your Digital Video Content Across Platforms", www.comscore.com, Dec. 2014 (2 pages).

Comscore, "The U.S. Total Video Report", www.comscore.com/TotalVideo, 2014 (18 pages).

"Nielsen: Solutions", <http://www.nielsen.com/us/en/solutions/measurement/television.html>, download from internet Mar. 8, 2016 (4 pages).

Cable TV: Prime-Time Viewership, by Channel, <http://www.journalism.org/media-indicators/cable-news-prime-time-viewership/>, download from internet Mar. 8, 2016 (1 page).

Clicky Web Analytics, https://clicky.com/stats/?site_id=32020, download from internet Mar. 8, 2016 (2 pages).

YouGovBrandIndex, <http://www.brandindex.com/about/what-can-i-use-brandindex>, download from internet Mar. 8, 2016 (1 page).

Social Code, "A Winning Super Bowl Digital Advertising Strategy," <http://socialcode.com/thought-leadership/blog/winning-super-bowl-digital-advertising-strategy/>, Jan. 22, 2015 (5 pages).

* cited by examiner

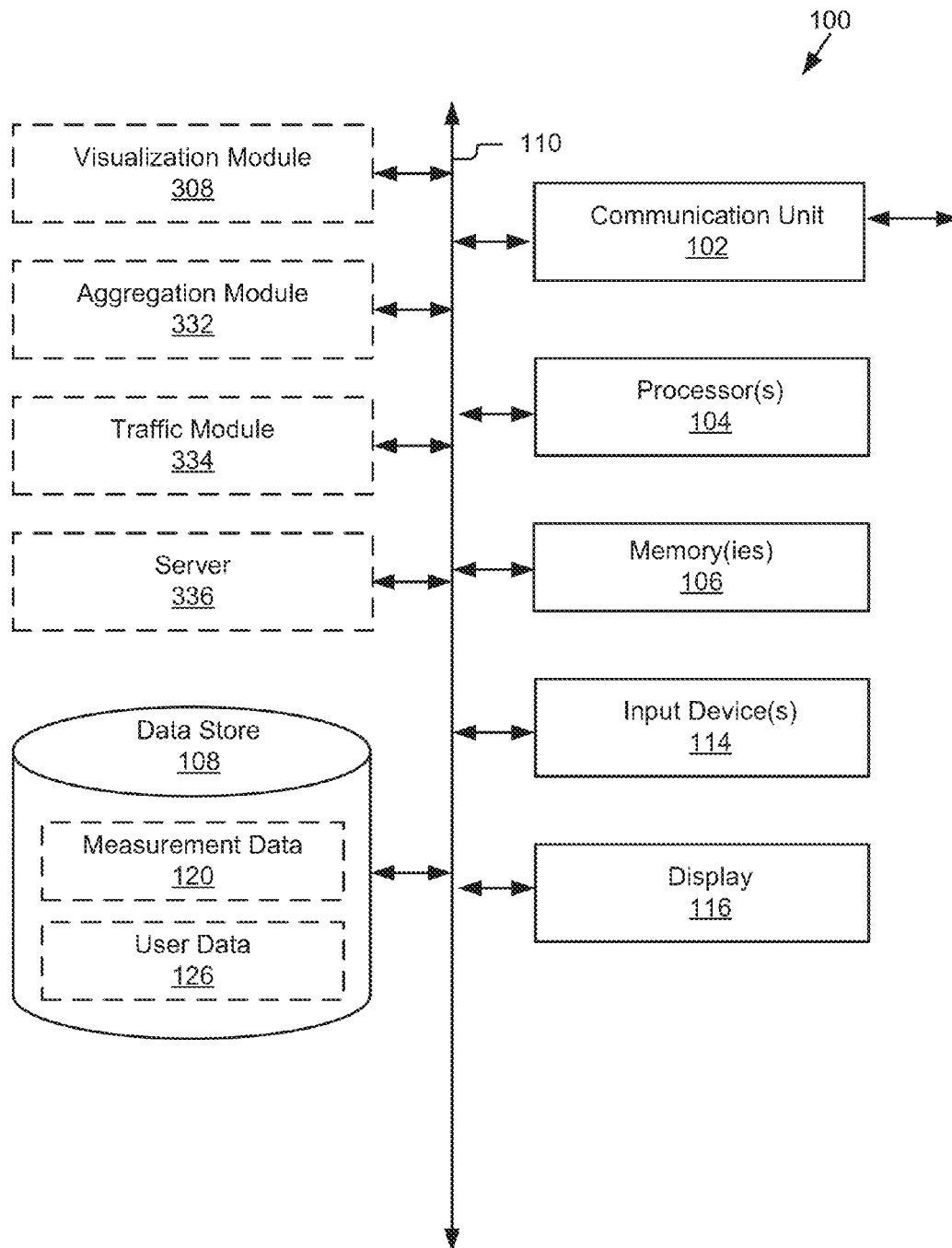


Figure 1

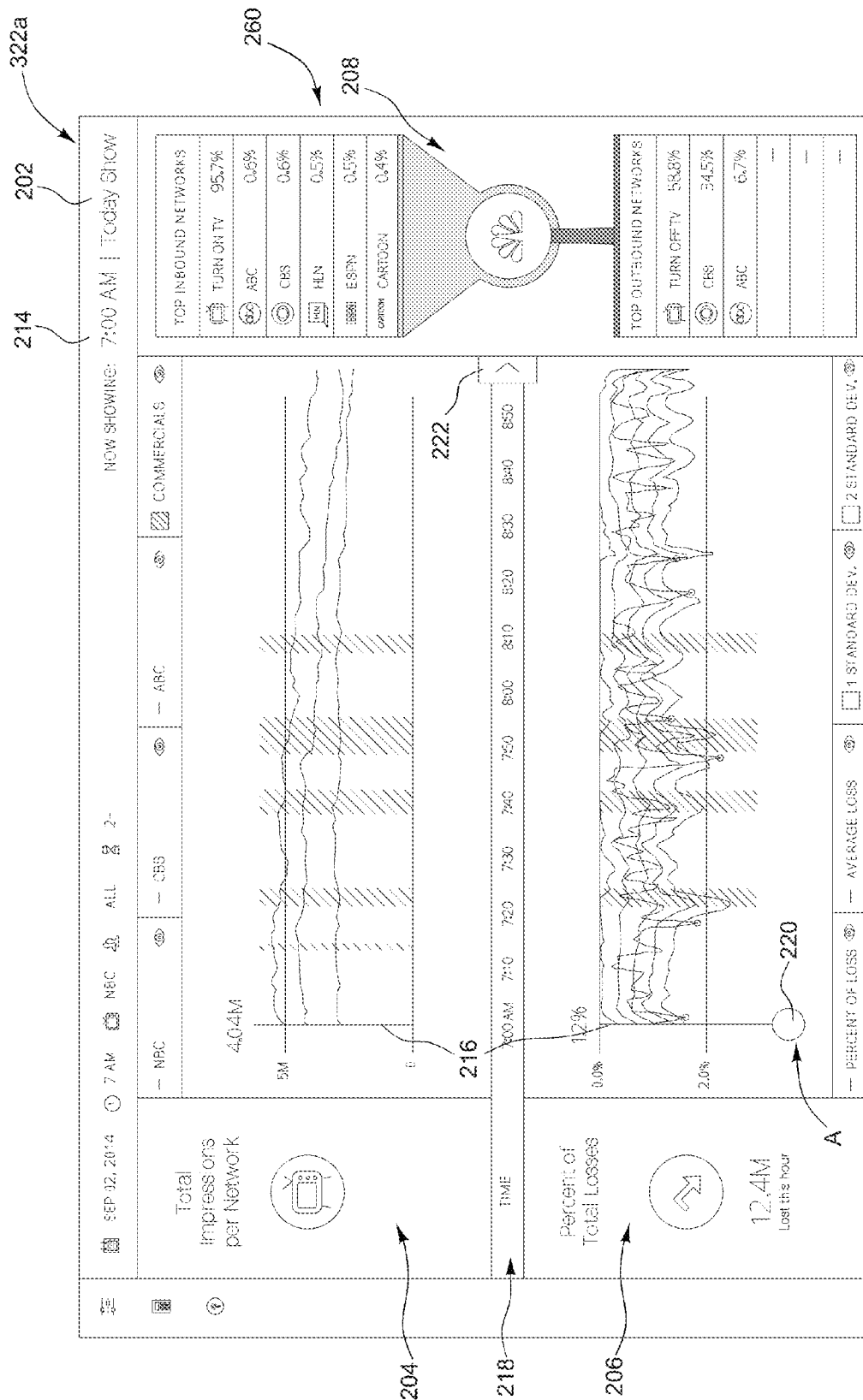


Figure 2A

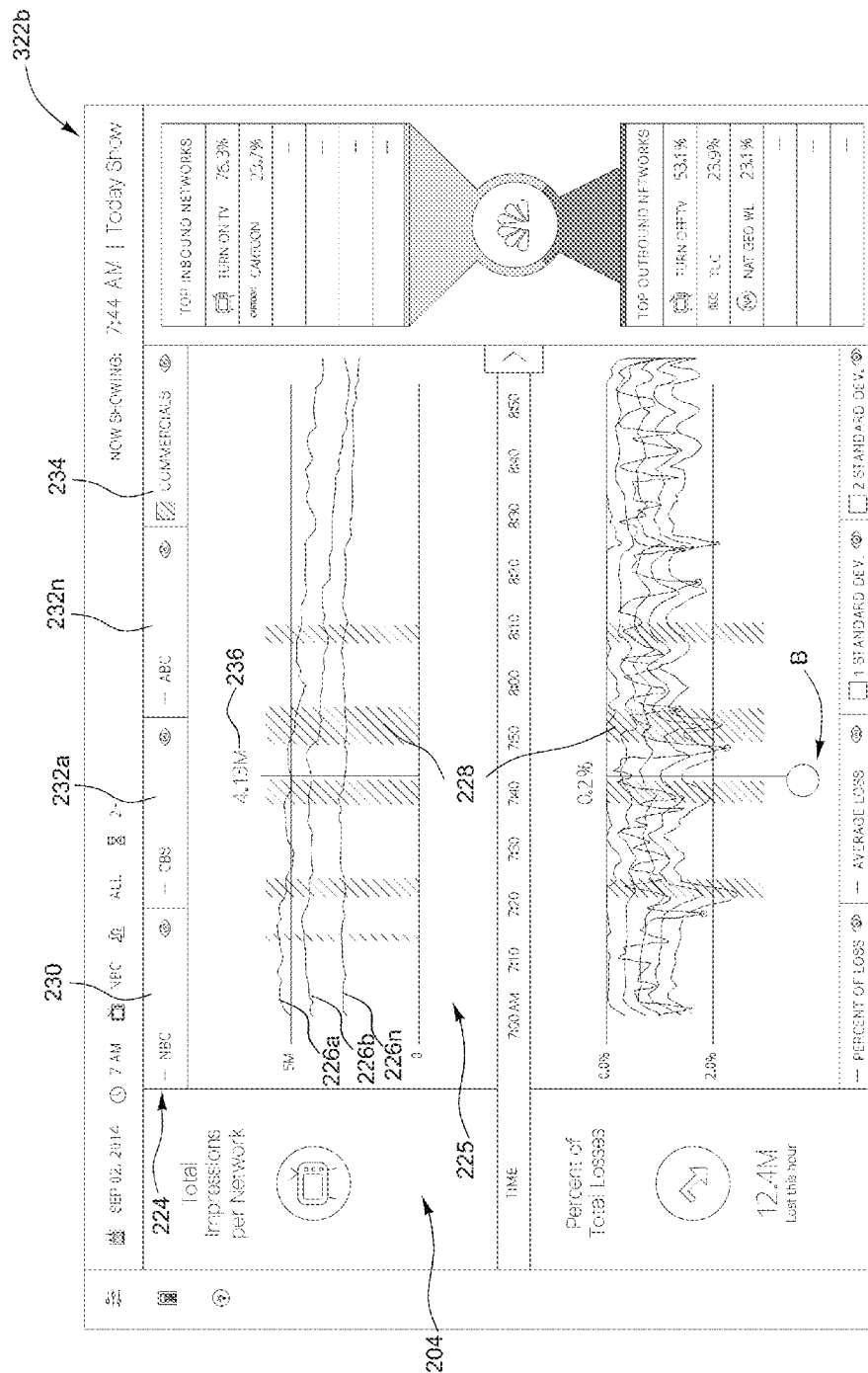
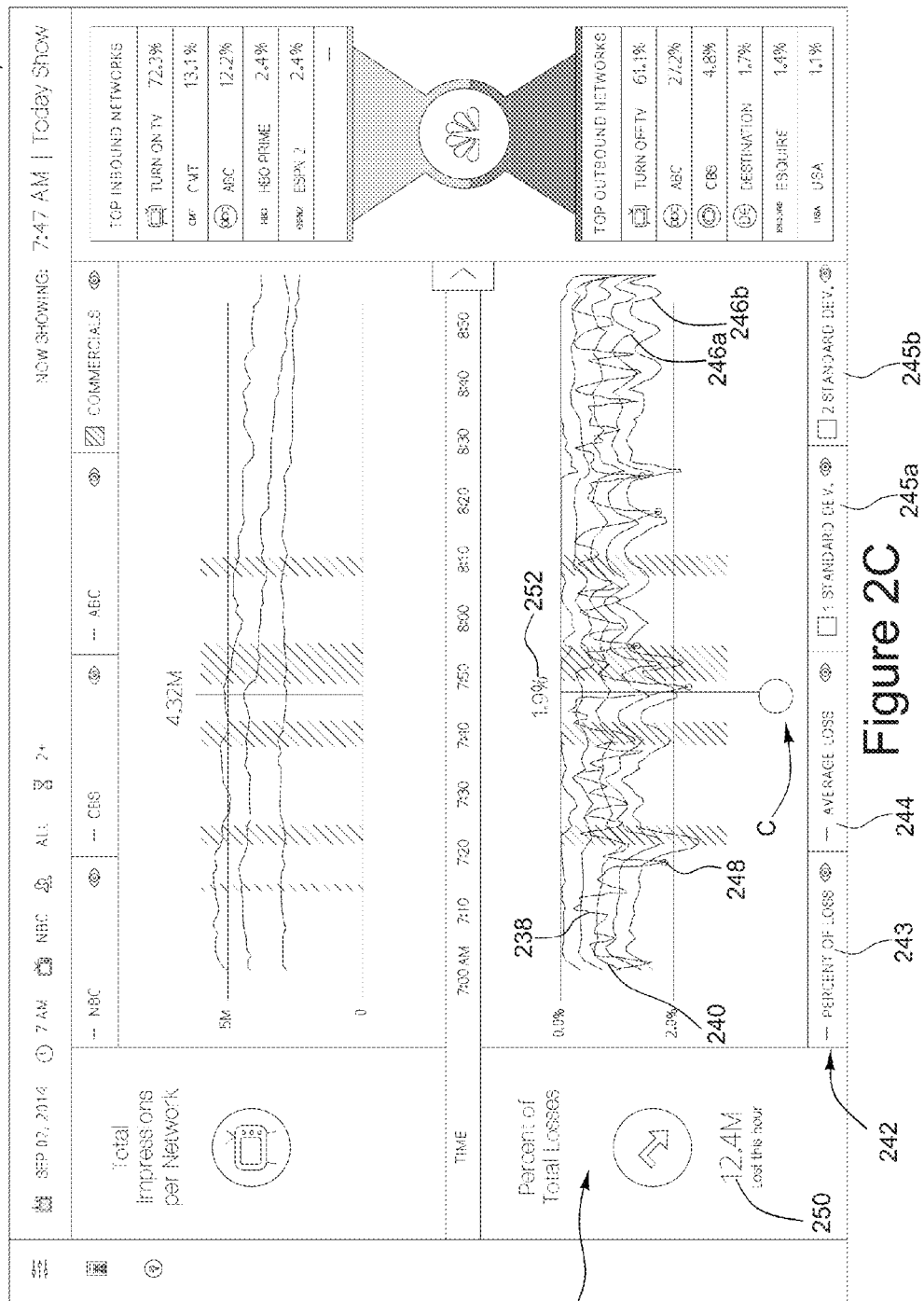
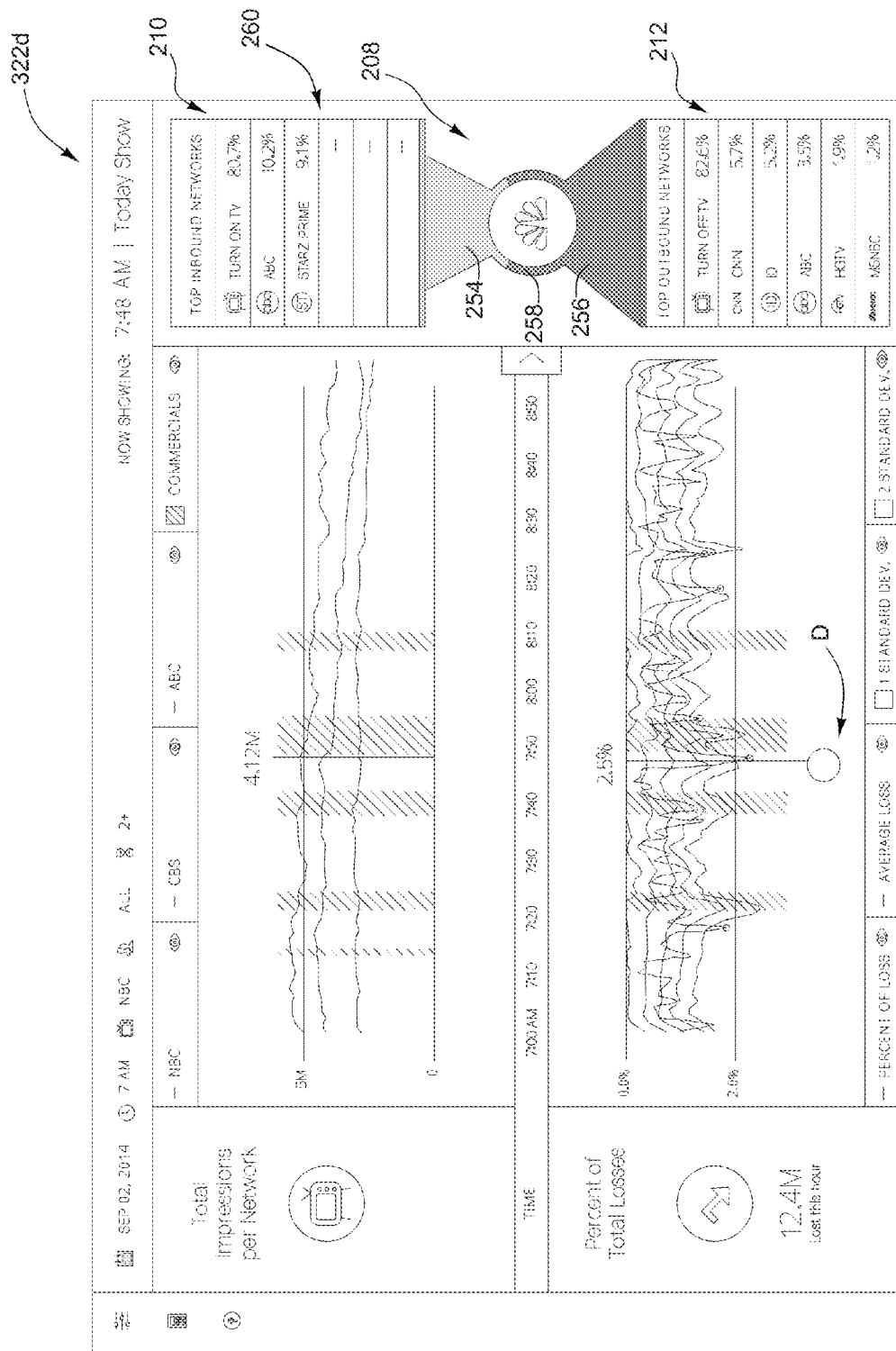


Figure 2B

322c





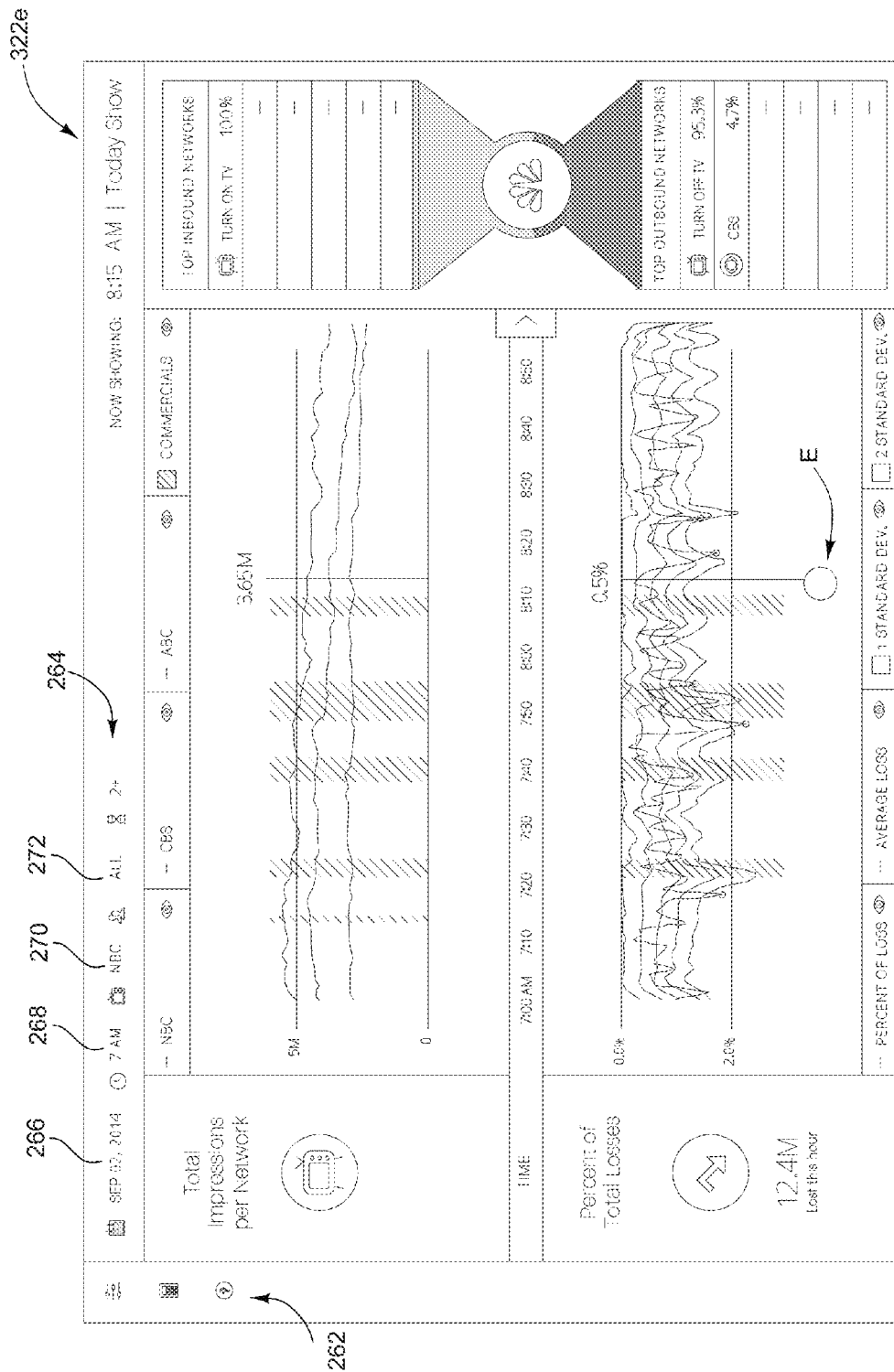


Figure 2E

322f

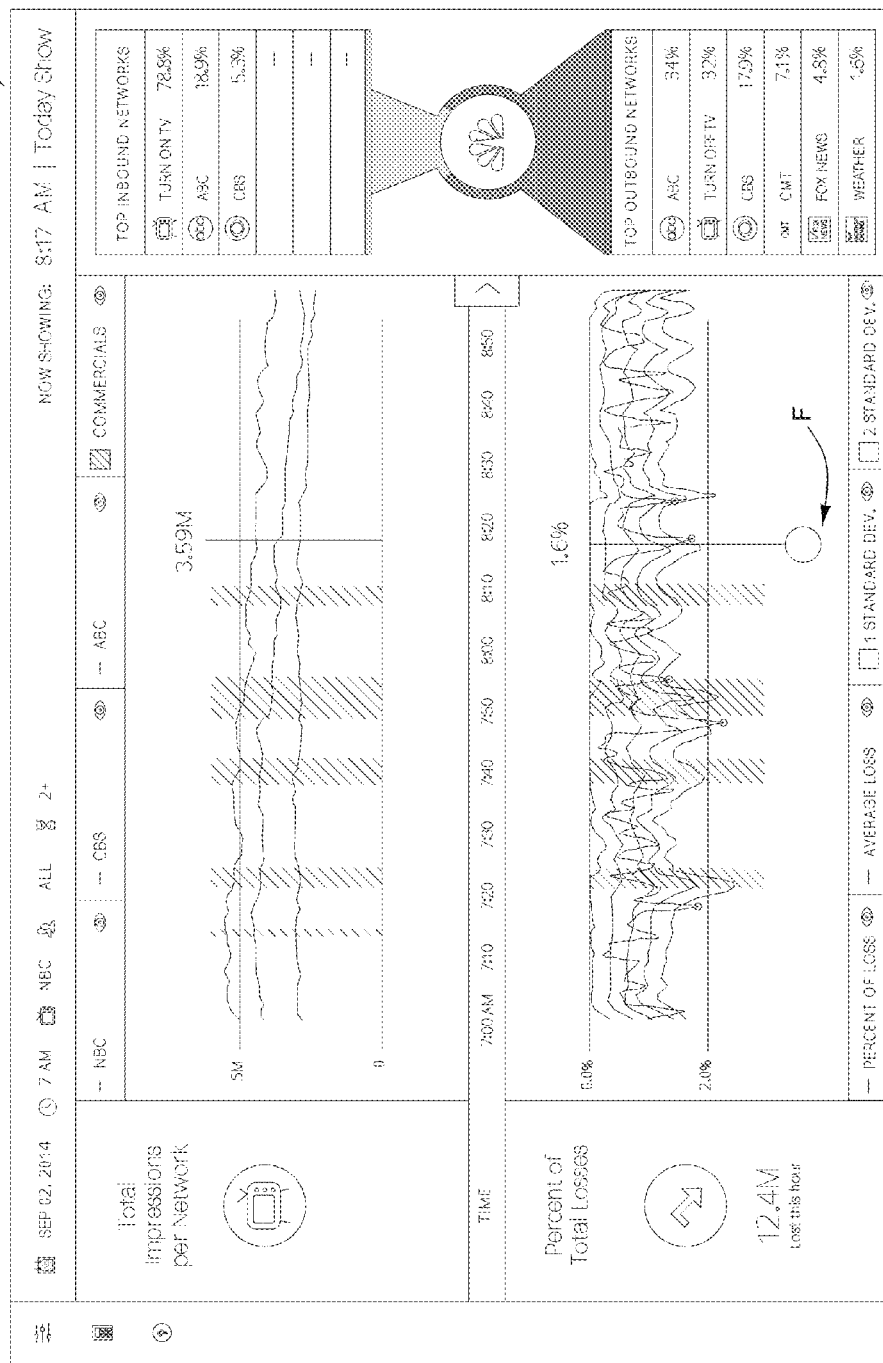


Figure 2F

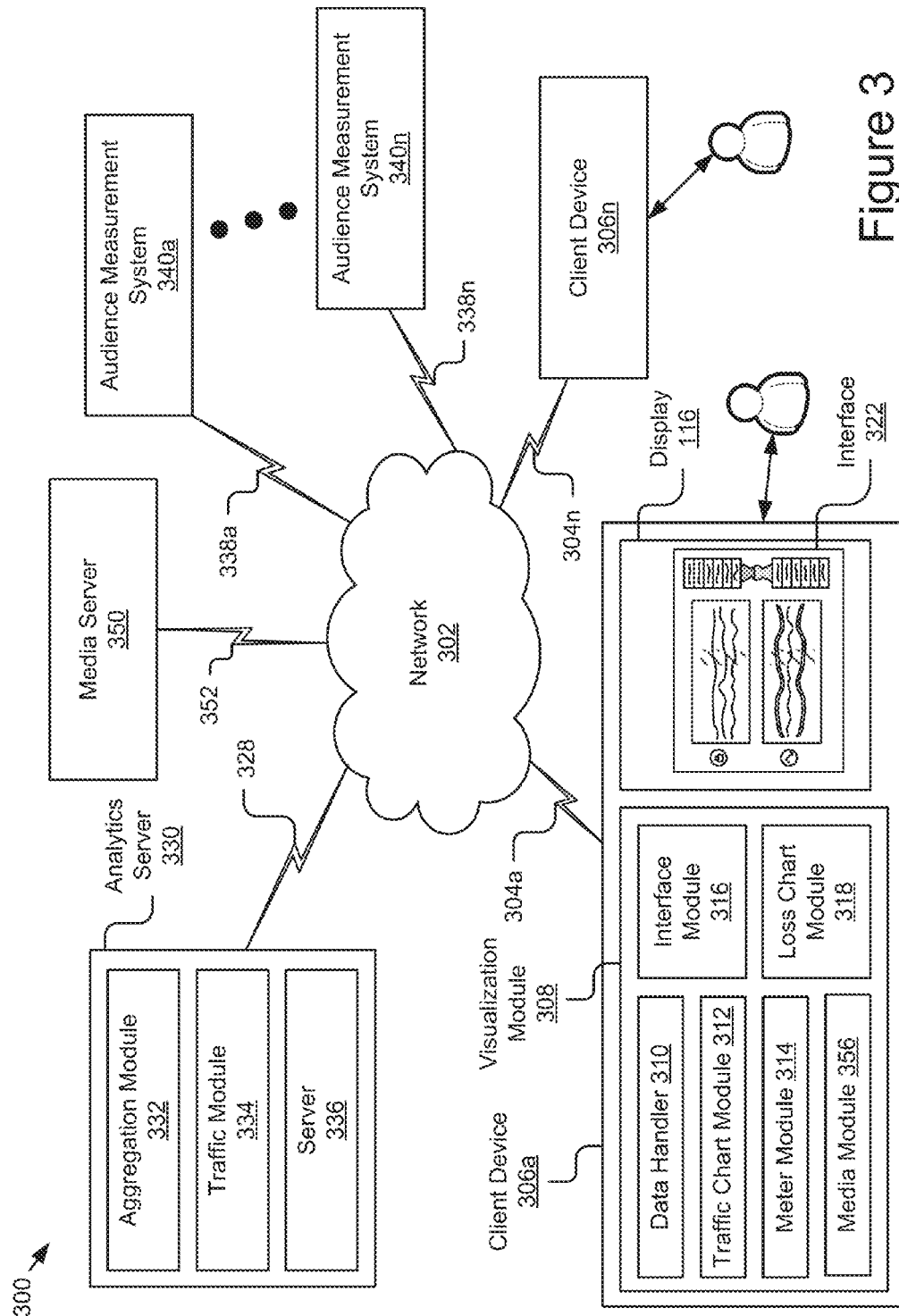


Figure 3

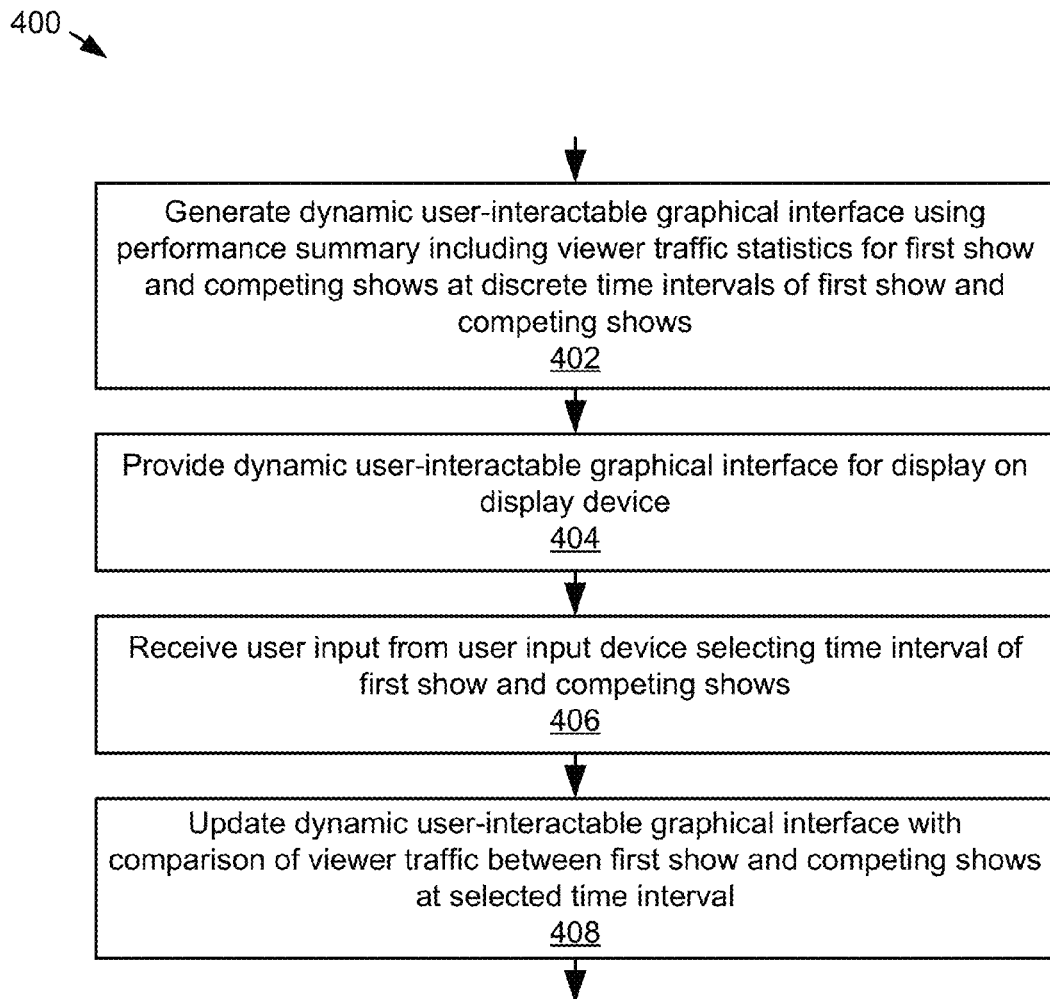


Figure 4

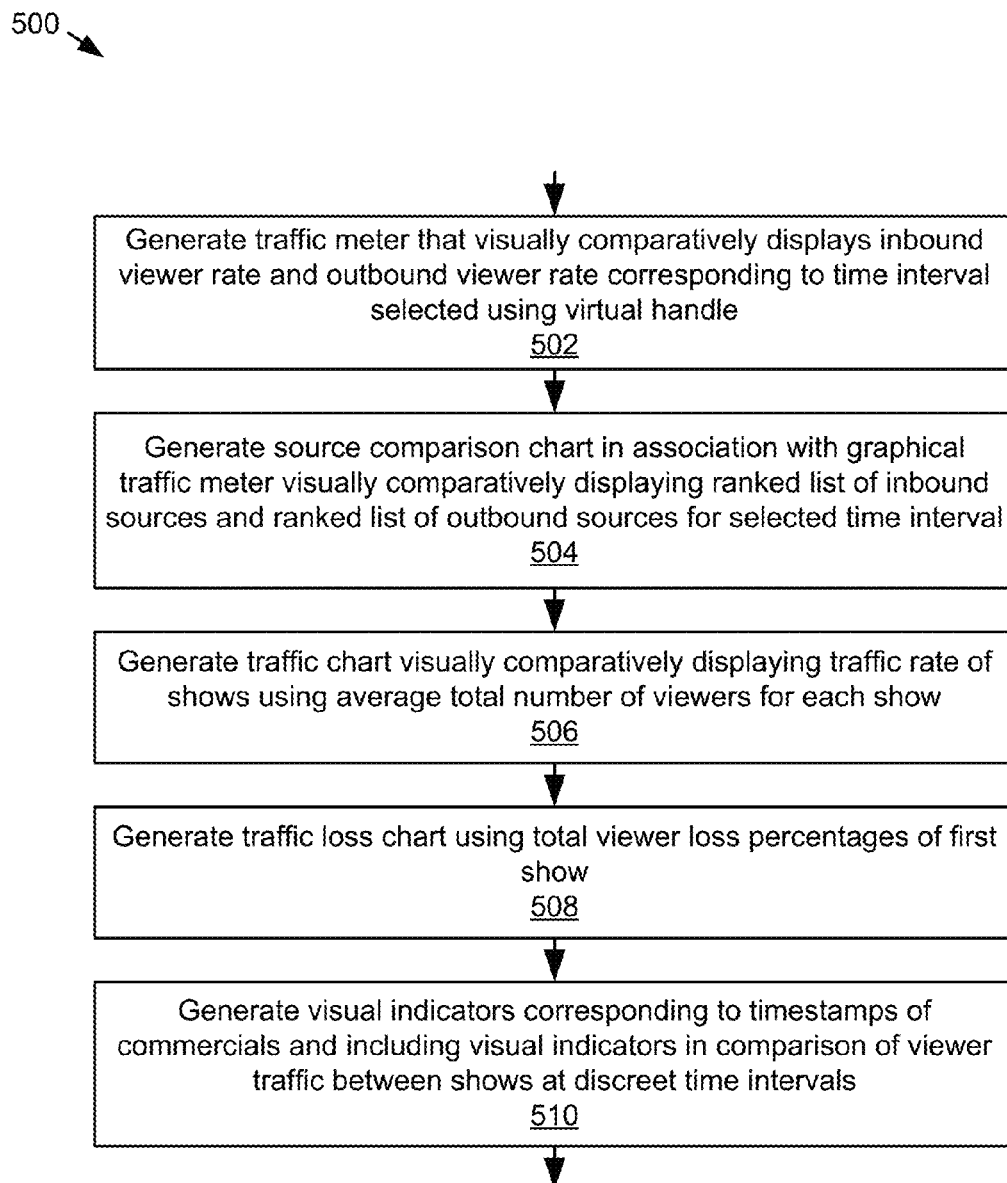


Figure 5

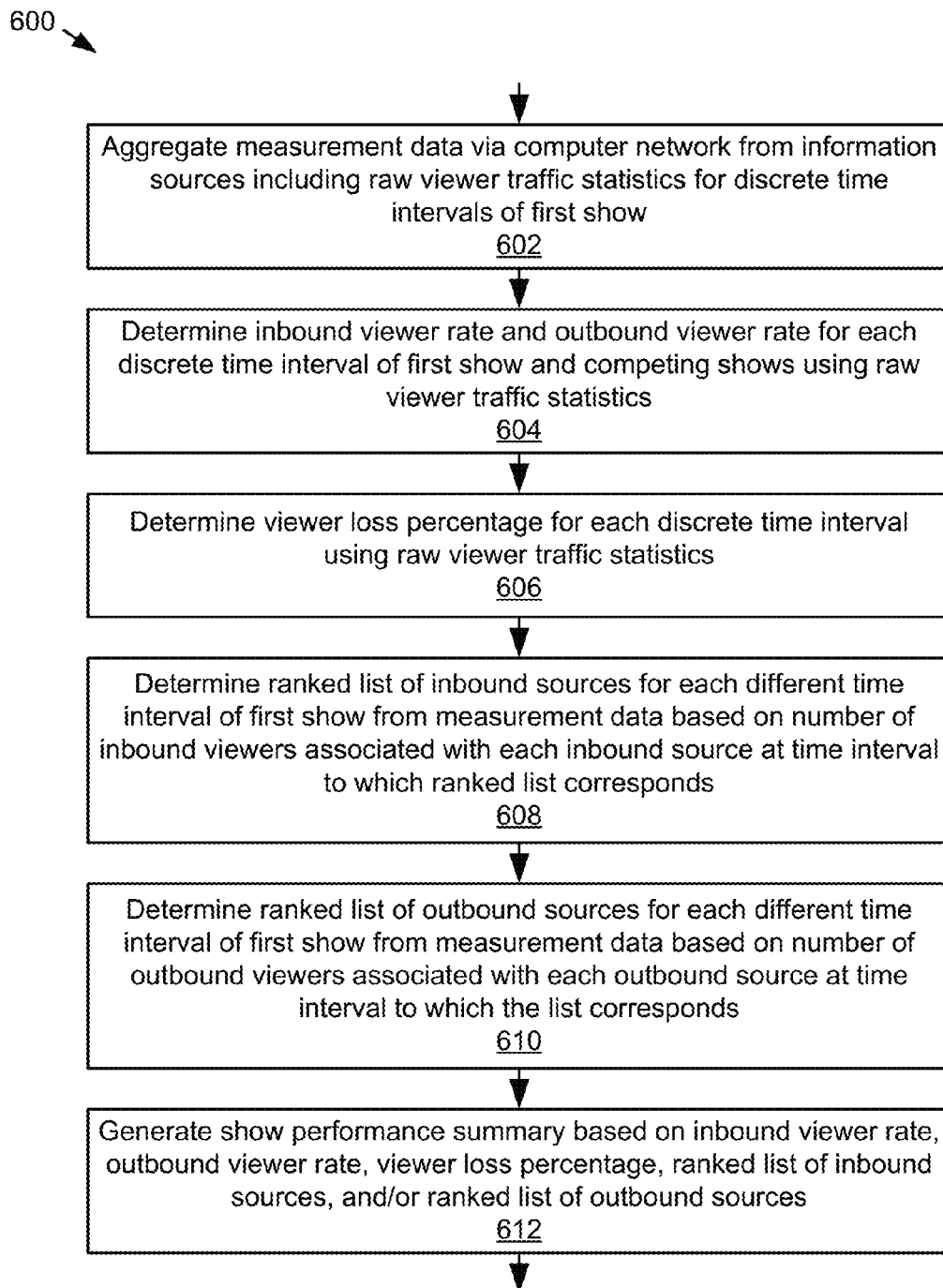


Figure 6

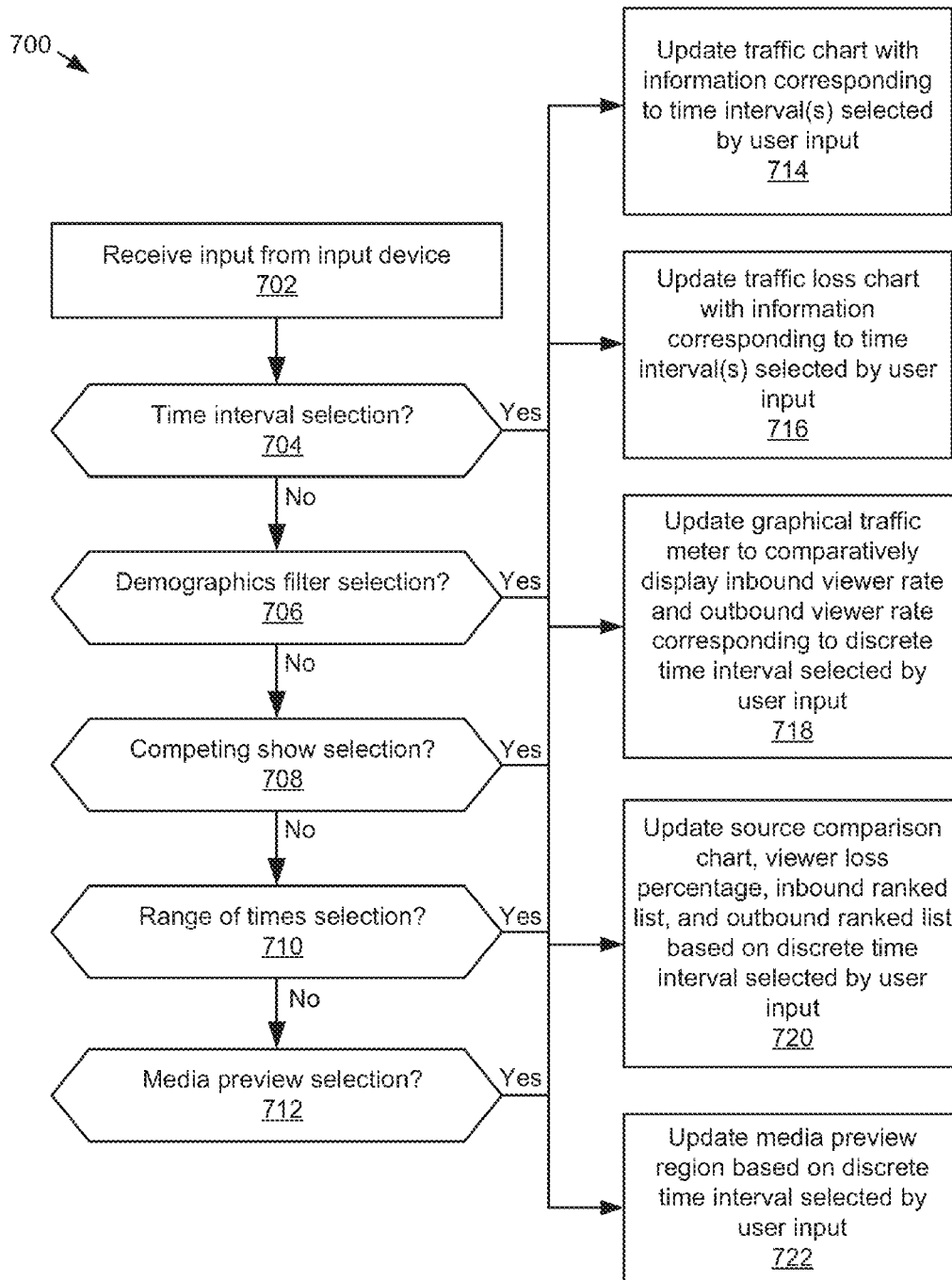


Figure 7

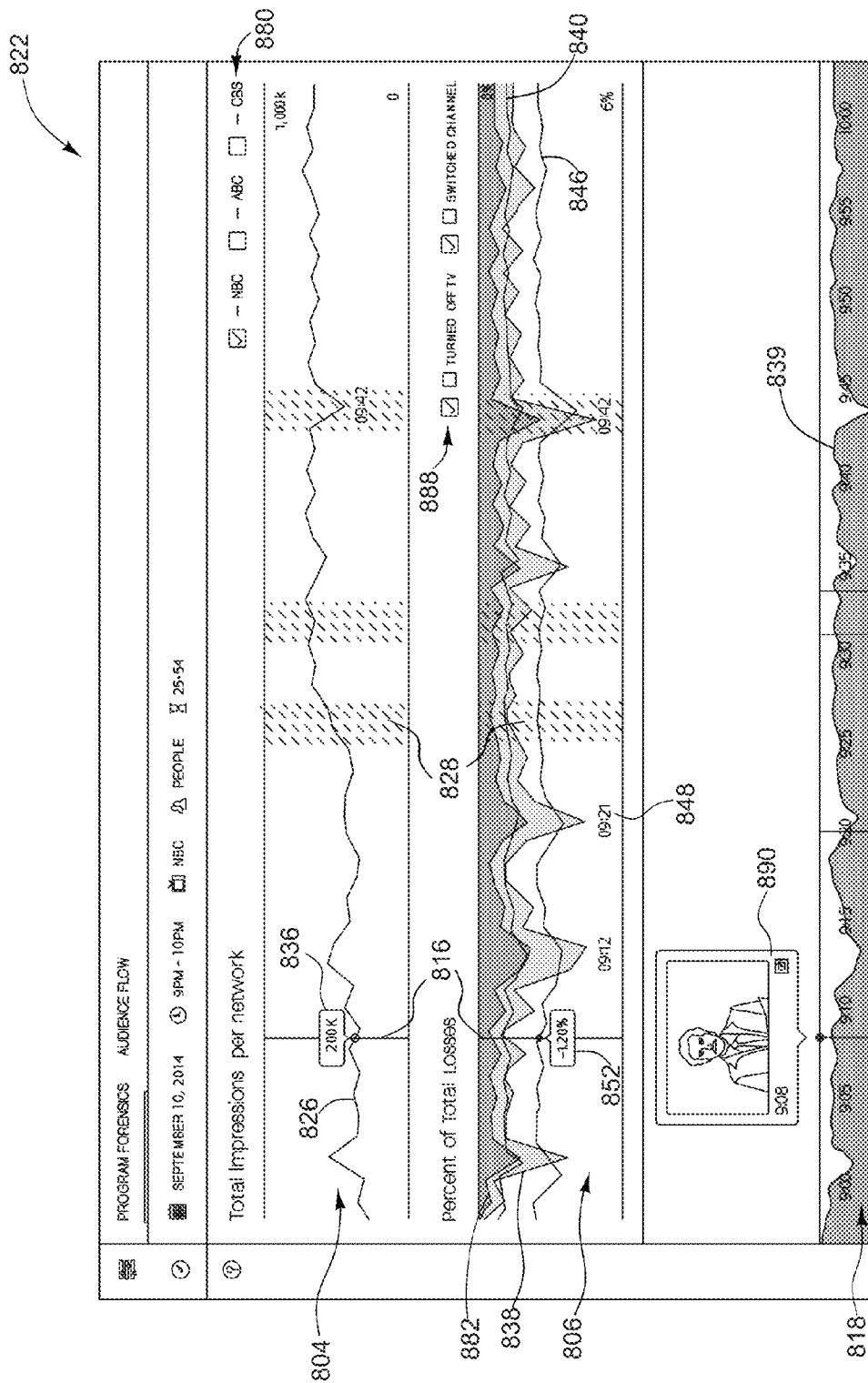


Figure 8

VIEWER TRAFFIC VISUALIZATION PLATFORM

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit under 35 U.S.C. §119 (e) of U.S. Provisional Patent Application No. 62/143,758, entitled "Viewer Traffic Visualization Platform" and filed Apr. 6, 2015, which is incorporated herein by reference in its entirety.

BACKGROUND

The present specification generally relates to technology for visualizing viewer traffic, such as, but not limited to, the viewer traffic of a given show relative to other competing show(s) and/or content provider(s).

Audience measurement systems, such as the audience measurement system provided by Nielsen, are capable of measuring TV viewing behavior by capturing data from national and local meters installed in the homes of a segment of the population and analyzing that data to determine how many people are watching the various shows that are on air. Other solutions measure viewer habits on other platforms, such as web-browsers, mobile apps, over-the-top (OTT) apps, etc.

However, these audience measurement systems, in many aspects, lack the ability to provide convenient virtual tools for analyzing, visualizing, and navigating the data being collected. Rather, the systems often merely provide raw data describing user behavior that is difficult to process for essential information about a show or merely provide standard statistics such as a show's demographic, reach, gross reach, cumulative reach, television rating point (TVR), etc., which often do not provide insights into the actual content of a given show, or the reasons viewers are not watching the show.

In addition, with the advent of the Internet, viewers are increasingly consuming video content online using a variety of different viewing platforms, such as smart phones, web-enabled TVs, tablets, laptops, etc., instead of using traditional broadcasting platforms, such watching over-the-air television broadcasts. Existing audience measurement systems are unable to monitor all of these different platforms for a number of reasons including that they do not have access to those platforms or the back end systems providing content to those platforms, they are unable to keep up with the current rate of innovation and the diversification of viewing options, they only specialize in or focus on a certain segment (e.g., browser-based video, app-based video, satellite TV, cable TV, over-the-air (OTA) TV, etc.), etc.

As a result, content producers are unable to effectively monitor the performance of their content across the different viewing platforms that are currently available, and in many cases have to guess the reasons why a given show is under or over performing. Furthermore, content producers are unable to conveniently visualize essential information about a given show using existing solutions, such as how many viewers are abandoning a show at various different points of the show, the specific reasons viewers are abandoning a show (e.g., is it because of reasons external to the show, the episode itself or the entire series, certain people on the show, etc.), how a given show stacks up to other shows at different points of time of the show, etc.

SUMMARY

According to one innovative aspect of the subject matter described in this disclosure, a system includes one or more

processors; a data handler executable by the one or more processors to receive a show performance summary including viewer traffic statistics for a first show and one or more competing shows at discrete time intervals of the first show and the one or more competing shows; a visualization module executable by the one or more processors to generate a dynamic user-interactable graphical interface using the performance summary and provide the dynamic user-interactable graphical interface for display via a display device, the dynamic user-interactable graphical interface to graphically display a comparison of viewer traffic between the first show and the one or more competing shows at the discrete time intervals; an interface module executable by the one or more processors to receive from an input device a user input selecting from the dynamic user-interactable graphical interface a time interval of the first show and the one or more competing shows, the interface module being coupled to the visualization module to provide the user input to the visualization module; and the visualization module being further executable by the one or more processors to update the dynamic user-interactable graphical interface provided for display via the display device with the comparison of the viewer traffic between the first show and the one or more competing shows at the time interval selected by the user input.

In general, another innovative aspect of the subject matter described in this disclosure may be embodied in a computer-implemented method includes generating at a user device a dynamic user-interactable graphical interface using a performance summary including viewer traffic statistics for a first show and one or more competing shows at discrete time intervals of the first show and the one or more competing shows, the dynamic user-interactable graphical interface being configured to graphically display a comparison of inbound and outbound viewer traffic between the first show and the one or more competing shows at the discrete time intervals; providing the dynamic user-interactable graphical interface for display via a display device associated with the user device; receiving from an input device associated with the user device a user input selecting from the dynamic user-interactable graphical interface a time interval of the first show and the one or more competing shows; and updating the dynamic user-interactable graphical interface provided for display via the display device with the comparison of the viewer traffic between the first show and the one or more competing shows at the time interval selected by the user input.

Other aspects include corresponding methods, systems, apparatus, and computer program products for these and other innovative aspects. Further advantages and benefits of the technology described herein are provided throughout this disclosure.

These and other implementations may each optionally include one or more of the following features. For instance, the features may include that generating the dynamic user-interactable graphical interface includes generating a virtual handle draggable within the dynamic user-interactable graphical interface by the user to isolate the viewer traffic associated with a certain discrete time interval from among the discrete time intervals of the viewer traffic, and the time interval selected by the user input is the certain discrete time interval selected by the user using the virtual handle; that the performance summary includes an inbound viewer rate and an outbound viewer rate for each of the discrete time intervals of the first show; that generating the dynamic user-interactable graphical interface includes generating a graphical traffic meter that visually comparatively displays

3

the inbound viewer rate and the outbound viewer rate corresponding to a selected time interval; and that updating the dynamic user-interactable graphical interface includes updating the graphical traffic meter to comparatively display the inbound viewer rate and the outbound viewer rate corresponding to the time interval selected by the user input.

For instance, the features may further include that the performance summary includes a ranked list of inbound sources for each of the discrete time intervals of the first show and a ranked list of outbound sources for each of the discrete time intervals of the first show; that generating the graphical traffic meter includes generating a source comparison chart in association with the graphical traffic meter that visually comparatively displays the ranked list of inbound sources and the ranked list of outbound sources for the selected time interval; that updating the dynamic user-interactable graphical interface includes synchronously updating the graphical traffic meter and the source comparison chart based on the time interval selected by the user input; that the performance summary includes an average total number of viewers at each of the discrete time intervals for each of the first show and the one or more competing shows; that generating the dynamic user-interactable graphical interface includes generating a traffic chart using the average total number of viewers for each of the first show and the one or more competing shows; that the traffic chart visually comparatively displaying a traffic rate of the first show to one or more traffic rates associated with the one or more competing shows, respectively; that updating the dynamic user-interactable graphical interface includes synchronously updating the graphical traffic meter and the traffic chart with information corresponding to the selected time interval; that the performance summary includes viewer loss percentages for each of the discrete time intervals of the first show; that generating the dynamic user-interactable graphical interface includes generating a traffic loss chart using the total viewer loss percentages of the first show; that updating the dynamic user-interactable graphical interface includes synchronously updating the graphical traffic meter, the traffic chart, and the traffic loss chart with information corresponding to the selected time interval; that the performance summary includes commercial occurrence data reflecting one or more commercials presented during a showing of the first show and including one or more timestamps associated with the one or more commercials reflecting when the one or more commercials occurred; and that generating the dynamic user-interactable graphical interface includes generating one or more visual overlays corresponding to the one or more timestamps of the one or more commercials and including the one or more visual indicators in the comparison of viewer traffic between the first show and the one or more competing shows at the discrete time intervals.

For instance, the features may further include aggregating measurement data via a computer network from one or more information sources including raw viewer traffic statistics for the discrete time intervals of the first show, the first show being viewable by viewers via one or more viewing platforms and being associated with a first content provider; generating using a server device or the user device the show performance summary based on the measurement data; that generating the show performance summary based on the measurement data includes determining, using the raw viewer traffic statistics, an inbound viewer rate and an outbound viewer rate for each of the different time intervals of the first show, and one or more inbound viewer rates and one or more outbound viewer rates for each of the different

4

time intervals of the one or more competing shows, determining, using the raw viewer traffic statistics, a viewer loss percentage for each of the discrete time intervals, determining, using the raw viewer traffic statistics, from the measurement data a ranked list of inbound sources for each of the different time intervals of the first show, the ranked list of inbound sources being ranked based on a number of inbound viewers associated with each of the inbound sources at a time interval to which the list corresponds, and determining, using the raw viewer traffic statistics, a ranked list of outbound sources for each of the different time intervals of the first show, the ranked list of outbound sources being ranked based on a number of outbound viewers associated with each of the outbound sources at a time interval to which the list corresponds; that aggregating the measurement data includes receiving the measurement data from the one or more information sources in real-time, near real-time, or delayed time; that the one or more information sources include one or more of a third-party audience measurement service and an information system associated with the first content provider; and that the one or more viewing platforms include one or more of Internet-connected devices, over-the-air televisions, cable televisions, and satellite televisions.

In general, another innovative aspect of the subject matter described in this disclosure may be embodied in a computer-implemented method including aggregating, using the one or more computing devices, measurement data from one or more information sources reflecting viewer traffic at discrete time intervals of a first show, the first show being viewable by viewers via one or more viewing platforms and being associated with a first content provider; determining, using the measurement data, inbound viewer rates and outbound viewer rates for the discrete time intervals of the first show; and generating for presentation on an electronic display using the one or more computing devices a dynamic graphical comparison between the ranked inbound sources and the ranked outbound sources at the discrete time intervals.

The technology described herein is particularly advantageous in a number of respects. For instance, the technology can provide convenient virtual tools for analyzing, visualizing, and navigating collected data regarding the performance of shows. Additionally, the technology can provide a platform for monitoring data for shows broadcast over a variety of viewing platforms. Furthermore, aspects of the invention allow a user to conveniently visualize essential information about a given show and competing shows. However, it should be understood that this list of features and advantages is provided by way of example, and that numerous additional features and advantages are also applicable and contemplated. Additionally, it should be understood that the language used in the present disclosure has been principally selected for readability and instructional purposes, and not to limit the scope of the subject matter disclosed herein.

BRIEF DESCRIPTION OF THE DRAWINGS

The disclosure is illustrated by way of example, and not by way of limitation in the figures of the accompanying drawings in which like reference numerals are used to refer to similar elements.

FIG. 1 is a block diagram illustrating an example computing device for providing a viewer traffic visualization platform.

5

FIGS. 2A-2F and 8 illustrate example dynamic user-interactable graphical interfaces for providing a visualization of various elements of a show performance summary.

FIG. 3 is a block diagram of an example system for analyzing and enabling visualization of viewer traffic.

FIG. 4 is a flowchart of an example method for analyzing and enabling visualization of viewer traffic.

FIG. 5 is a flowchart of an example method for generating a dynamic user-interactable graphical interface using a performance summary for a first show and one or more competing shows.

FIG. 6 is a flowchart of an example method for generating an example show performance summary.

FIG. 7 is a flowchart of an example method for displaying a show performance summary to a user in a useful and easily consumable way based on user input and/or a selected time input.

DETAILED DESCRIPTION

FIG. 1 is a block diagram of an example computing system 100, various configurations of which may represent the computer architecture of a client devices 306a . . . 306n (also referred to herein individually and/or collectively as 306) and/or an analytics server 330, such as those depicted in FIG. 3.

As depicted in FIG. 1, and further in FIG. 3, the computing system 100 may include a visualization module 308, an aggregation module 332, a traffic module 334, and a server 336, depending on the configuration. For instance, as shown in FIG. 3, a client device 306 may include the visualization module 308 and the analytics server 330 may include the aggregation module 332, the traffic module 334, and the server 336, although other configurations are also possible and contemplated, such as where the aggregation module 332 and/or the traffic module 334, or various components and/or functions thereof, are incorporated into the client device 306, the visualization module 308, and/or the analytics server 330.

The visualization module 308 includes computer logic executable to provide for user interaction, receive user input, present information to the user via a display, such as the display 116, and send data to and receive data from the other entities of the system 300 via the network 302. In some implementations, the visualization module 308 may generate and present user interfaces, such as the user-interactable graphical interface 322 (e.g., as shown in FIGS. 2A-2F) and/or 822 (e.g., as shown in FIG. 8) based at least in part on information received from the server 336 via the network 302, as discussed further elsewhere herein.

In some implementations, the visualization module 308 includes a web browser and/or code operable therein, a customized native or client-side application (e.g., a dedicated mobile app) and/or code operating therein, a combination of the foregoing, etc.

The aggregation module 332 includes computer logic executable by the processor(s) 104 to aggregate measurement data 120, including, for example, audience and commercial occurrence data, from various information sources, such as computing devices and/or non-transitory storage media (e.g., databases, servers, etc.) configured to receive and satisfy data requests. The information sources from which the aggregation module 332 aggregates data, depicted in FIG. 3 as audience measurement systems 340a . . . 340n, may be associated with information measurement service providers (e.g., Nielsen™, Kantar™, Rentrak™, com-Score™, Ooyala™, Brightcove™, etc.), channel/network/

6

content providers (e.g., NBC™, ABC™, Discovery™, ESPN™, etc.), online video providers (e.g., Hulu™, YouTube™, etc.), and/or other content providers, online audio providers (e.g., Spotify™), etc.

The aggregation module 332 is coupled to the data store 108 to store, retrieve, and/or manipulate data stored therein and may be coupled to the traffic module 334, the server 336, the visualization module 308, and/or other components of the system 300 to exchange information therewith. For example, the aggregation module 332 may store, retrieve, and/or manipulate the measurement data 120 aggregated by it in the data store 108, and or may provide the data aggregated and/or processed by it to the traffic module 334 and/or the server 336 (e.g., preemptively or responsive to a function or procedure call, etc.).

The measurement data 120 may be stored in a data store 108 and include viewer-related information about shows accessible from any applicable viewing platform. A show means audio or audiovisual content viewable by a user. The show may be pre-recorded or live. The show may be professional or amateur in nature. In some implementations, the show may be broadcast OTA, via satellite, cable, radio, the Internet, during a particular time slot, may be broadcast on demand, or recorded (e.g., on a digital video recorder), etc. Example platforms include but are not limited to online video (e.g., desktop, tablet, phone, set-top boxes, smart television, etc.), OTA, cable, satellite, etc., viewing platforms.

The measurement data may include network impressions and/or commercial occurrence data in some implementations. In addition to its plain and ordinary meaning, a network impression, or impression, means any instance of a user consuming a show (e.g., viewing, listening, playing back, streaming, etc., video data). In some instances, the number of impressions may correspond to the number of devices tuned to show. For example, a number of impressions may include a number of terminals (e.g., television sets) being tuned to a particular show at a particular time interval. In another example, an impression may be the number of clients streaming an online show (e.g., video data, audio data, etc.) playing at a particular time interval of that online show.

The term interval, in some contexts herein, refers to a discrete time increment over which data (e.g., a show performance summary) may be collected, analyzed, displayed, etc. In other contexts, the term interval also refers to a time period selected by a user in a user-interactable graphical interface (e.g., 322, 822, etc.). In regard to the latter definition, it should be understood that while the time period selected by a user may be the same as an increment over which data is collected, analyzed, and/or displayed, it may alternatively be a larger time period consisting of a plurality of such time increments. In some implementations, the time period reflected by the user selection may be set by user preference, interaction with the interface, or as a feature programmed into the visualization module 308.

The following table A collectively illustrates N rows of an example instance of measurement data 120 for the show NBC Nightly News that has been aggregated by the aggregation module 332 and processed, stored, formatted, and/or output by the traffic module 334. It should be understood that other variations, formats, data types, etc., of data are also possible and contemplated.

7

TABLE A

Row #	Network	Date	Weekday	Time
1	NBC	Dec. 8, 2011	Thu	6:38 PM
2	NBC	Dec. 8, 2011	Thu	6:39 PM
3	NBC	Dec. 8, 2011	Thu	6:41 PM
4	NBC	Dec. 8, 2011	Thu	6:42 PM
5	NBC	Dec. 8, 2011	Thu	6:47 PM
6	NBC	Dec. 8, 2011	Thu	6:48 PM
7	NBC	Dec. 8, 2011	Thu	6:49 PM
8	NBC	Dec. 8, 2011	Thu	6:52 PM
...	NBC	Dec. 8, 2011	Thu	6:55 PM
N	NBC	Dec. 8, 2011	Thu	6:57 PM

Row #	Program	MOP	Genre	Program Type
1 (cont)	NBC NIGHTLY NEWS	9	News	NEWS
2 (cont)	NBC NIGHTLY NEWS	10	News	NEWS
3 (cont)	NBC NIGHTLY NEWS	12	News	NEWS
4 (cont)	NBC NIGHTLY NEWS	13	News	NEWS
5 (cont)	NBC NIGHTLY NEWS	18	News	NEWS
6 (cont)	NBC NIGHTLY NEWS	19	News	NEWS
7 (cont)	NBC NIGHTLY NEWS	20	News	NEWS
8 (cont)	NBC NIGHTLY NEWS	23	News	NEWS
... (cont)	NBC NIGHTLY NEWS	26	News	NEWS
N (cont)	NBC NIGHTLY NEWS	28	News	NEWS

Row #	Program Subtype	Trackage	Episode	Telecast Time
1 (cont)	NEWS			06:30 PM-06:59 PM
2 (cont)	NEWS			06:30 PM-06:59 PM
3 (cont)	NEWS			06:30 PM-06:59 PM
4 (cont)	NEWS			06:30 PM-06:59 PM
5 (cont)	NEWS			06:30 PM-06:59 PM
6 (cont)	NEWS			06:30 PM-06:59 PM
7 (cont)	NEWS			06:30 PM-06:59 PM
8 (cont)	NEWS			06:30 PM-06:59 PM
... (cont)	NEWS			06:30 PM-06:59 PM
N (cont)	NEWS			06:30 PM-06:59 PM

Row #	Telecast Duration	Average Audience	Average Audience (% change)	Rating
1 (cont)	30	1264298	0.015	2.078415419
2 (cont)	30	1275234	0.0086	2.09639342
3 (cont)	30	1227583	-0.0096	2.018058587
4 (cont)	30	1244953	0.0141	2.046613623
5 (cont)	30	1258190	0.0394	2.068374304
6 (cont)	30	1233574	-0.0196	2.027907362
7 (cont)	30	1239179	0.0045	2.037121581
8 (cont)	30	1248288	0.0249	2.052096125
... (cont)	30	1243109	0.0098	2.043582219
N (cont)	30	1229871	0.0158	2.021819895

Row #	Commercial Time (sec)	Promo Time (sec)	PSA Time (sec)	Non-program Total Time (sec)
1 (cont)				
2 (cont)				
3 (cont)				
4 (cont)	43			43
5 (cont)				
6 (cont)	52			52
7 (cont)	60			60
8 (cont)				
... (cont)	60			60
N (cont)				

Row #	Reach	Reach (% change)	In Flow - Tune	In Flow - Tune (%)
1 (cont)	1216095	0.0156	28126	0.0231
2 (cont)	1227031	0.009	7939	0.0065
3 (cont)	1194223	-0.0099	24748	0.0207
4 (cont)	1211593	0.0145	26137	0.0216
5 (cont)	1224830	0.0405	55587	0.0454
6 (cont)	1200214	-0.0201	21805	0.0182
7 (cont)	1205819	0.0047	31941	0.0265
8 (cont)	1214928	0.0256	27072	0.0223
... (cont)	1209749	0.01	24657	0.0204

8

TABLE A-continued

N (cont)	1196511	0.0163	41196	0.0344
Row #	In Flow - Lead	In Flow - Lead (%)	In Flow - Switch	In Flow - Switch (%)
1 (cont)	1179714	0.9701	8255	0.0068
2 (cont)	1203286	0.9806	15806	0.0129
3 (cont)	1169475	0.9793	0	0
4 (cont)	1169238	0.965	16218	0.0134
5 (cont)	1154318	0.9424	14925	0.0122
6 (cont)	1150603	0.9587	27806	0.0232
7 (cont)	1170229	0.9705	3649	0.003
8 (cont)	1169917	0.963	17939	0.0148
... (cont)	1185092	0.9796	0	0
N (cont)	1152957	0.9636	2358	0.002

Row #	Switch In - 1 Network	Switch In - 1 Reach	Switch In - 1 Reach (%)	Switch In - 2 Network
1 (cont)	UNIVISION	6555	0.0054	NFL NETWORK
2 (cont)	CBS	14115	0.0115	ABC
3 (cont)		0	0	
4 (cont)	BET	11902	0.0098	HBO PRIME
5 (cont)	BET	11902	0.0097	FOOD
6 (cont)	GOLF	15349	0.0128	CBS
7 (cont)	ABC	3649	0.003	
8 (cont)	COMEDY CENTRAL	4586	0.0038	CBS
... (cont)		0	0	
N (cont)	SCIENCE	2358	0.002	

Row #	Switch In - 2 Reach	Switch In - 2 Reach (%)	Switch In - 3 Network	Switch In - 3 Reach
1 (cont)	1700	0.0014		0
2 (cont)	1691	0.0014		0
3 (cont)	0	0		0
4 (cont)	2251	0.0019	MTV	2065
5 (cont)	3023	0.0025		0
6 (cont)	7241	0.006	ABC FAMILY	3065
7 (cont)	0	0		0
8 (cont)	3909	0.0032	SPROUT	3688
... (cont)	0	0		0
N (cont)	0	0		0

Row #	Switch In - 3 Reach (%)	Switch In - 4 Network	Switch In - 4 Reach	Switch In - 4 Reach (%)
1 (cont)	0		0	0
2 (cont)	0		0	0
3 (cont)	0		0	0
4 (cont)	0.0017		0	0
5 (cont)	0		0	0
6 (cont)	0.0026	LMN	2151	0.0018
7 (cont)	0		0	0
8 (cont)	0.003	TBS	3398	0.0028
... (cont)	0		0	0
N (cont)	0		0	0

Row #	Switch In - 5 Network	Switch In - 5 Reach	Switch In - 5 Reach (%)	Switch In - Other Networks
1 (cont)		0	0	Other
2 (cont)		0	0	Other
3 (cont)		0	0	Other
4 (cont)		0	0	Other
5 (cont)		0	0	Other
6 (cont)		0	0	Other
7 (cont)		0	0	Other
8 (cont)	NAT GEO	2358	0.0019	Other
... (cont)		0	0	Other
N (cont)		0	0	Other

Row #	Switch In - Other Reach	Switch In - Other Reach (%)	Out Flow - Tune	Out Flow - Tune (%)
1 (cont)	0	0	4437	0.0036
2 (cont)	6.66E-13	5.43E-21	60489	0.0493
3 (cont)	0		20664	0.0173
4 (cont)	8.88E-13	7.33E-21	32407	0.0267

TABLE A-continued

5 (cont)	0	0	28674	0.0234
6 (cont)	1.33E-12	1.11E-20	24917	0.0208
7 (cont)	0	0	35866	0.0297
8 (cont)	0	0	16624	0.0137
... (cont)	0	0	36212	0.0299
N (cont)	0	0	8249	0.0069

Row #	Out Flow - Lead	Out Flow - Lead (%)	Out Flow - Switch	Out Flow - Switch (%)
1 (cont)	1203286	0.9895	8372	0.0069
2 (cont)	1164350	0.9489	2192	0.0018
3 (cont)	1169238	0.9791	4321	0.0036
4 (cont)	1133650	0.9357	45536	0.0376
5 (cont)	1150603	0.9394	45553	0.0372
6 (cont)	1170229	0.975	5068	0.0042
7 (cont)	1165367	0.9665	4586	0.0038
8 (cont)	1198304	0.9863	0	0
... (cont)	1173537	0.9701	0	0
N (cont)	1188262	0.9931	0	0

Row #	Switch Out - 1 Network	Switch Out - 1 Reach	Switch Out - 1 Reach (%)	Switch Out - 2 Network
1 (cont)	TBS	3398	0.0028	E!
2 (cont)	ESPN	2192	0.0018	
3 (cont)	HGTV	4321	0.0036	
4 (cont)	ABC	17661	0.0146	CBS
5 (cont)	ABC	26188	0.0214	ESPNEWS
6 (cont)	HISTORY	2710	0.0023	SCIENCE
7 (cont)	COMEDY CENTRAL	4586	0.0038	
8 (cont)		0	0	
... (cont)		0	0	
N (cont)		0	0	

Row #	Switch Out - 2 Reach	Switch Out - 2 Reach (%)	Switch Out - 3 Network	Switch Out - 3 Reach
1 (cont)	2823	0.0023	LMN	2151
2 (cont)	0	0		0
3 (cont)	0	0		0
4 (cont)	15973	0.0132	BET	11902
5 (cont)	10922	0.0089	TBS	3398
6 (cont)	2358	0.002		0
7 (cont)	0	0		0
8 (cont)	0	0		0
... (cont)	0	0		0
N (cont)	0	0		0

Row #	Switch Out - 3 Reach (%)	Switch Out - 4 Network	Switch Out - 4 Reach	Switch Out - 4 Reach (%)
1 (cont)	0.0018		0	0
2 (cont)	0		0	0
3 (cont)	0		0	0
4 (cont)	0.0098		0	0
5 (cont)	0.0028	FOOD	3023	0.0025
6 (cont)	0		0	0
7 (cont)	0		0	0
8 (cont)	0		0	0

TABLE A-continued

... (cont)	0	0	0
N (cont)	0	0	0

Row #	Switch Out - 5 Network	Switch Out - 5 Reach	Switch Out - 5 Reach (%)	Switch Out - Other Networks
1 (cont)		0	0	Other
2 (cont)		0	0	Other
3 (cont)		0	0	Other
4 (cont)		0	0	Other
5 (cont)	GSN	2022	0.0017	Other
6 (cont)		0	0	Other
7 (cont)		0	0	Other
8 (cont)		0	0	Other
... (cont)		0	0	Other
N (cont)		0	0	Other

Row #	Switch Out - Other Reach	Switch Out - Other Reach (%)	Program_New	Demo
1 (cont)	4.44E-13	3.65E-21	Nightly News M-F	F25-54
2 (cont)	0	0	Nightly News M-F	F25-54
3 (cont)	0	0	Nightly News M-F	F25-54
4 (cont)	0	0	Nightly News M-F	F25-54
5 (cont)	1.78E-12	1.45E-20	Nightly News M-F	F25-54
6 (cont)	0	0	Nightly News M-F	F25-54
7 (cont)	0	0	Nightly News M-F	F25-54
8 (cont)	0	0	Nightly News M-F	F25-54
... (cont)	0	0	Nightly News M-F	F25-54
N (cont)	0	0	Nightly News M-F	F25-54

Row #	Retitle	Special	Sustaining
1 (cont)	0	0	0
2 (cont)	0	0	0
3 (cont)	0	0	0
4 (cont)	0	0	0
5 (cont)	0	0	0
6 (cont)	0	0	0
7 (cont)	0	0	0
8 (cont)	0	0	0
... (cont)	0	0	0
N (cont)	0	0	0

The following table B collectively illustrates N rows of another example instance of example measurement data **120** that that has been aggregated by the aggregation module **332** and processed, stored, formatted, and/or output by the traffic module **334**, although other and/or different data may additionally and/or alternatively be included in table A and/or B. For instance, it should be understood that data associated with shows with different dates and times could be used, shows that air in different time slots and/or in the same timeslots may be included, shows streamed via the Internet may be included, and/or that other variations, formats, data types, etc., of data are also possible. For instance, any of the type of data from Table A may be included, depending on the data being visualized (such as that depicted in FIGS. 2A-2F and **8**).

TABLE B

Row	network	date	program	time	mop	reach
1	CBS	Jan. 24, 2014	CBS EVENING NEWS	6:34 PM	5	1146072
2	ABC	Aug. 19, 2012	THIS WEEK	10:35 AM	36	204147
3	CBS	Apr. 1, 2012	FACE THE NATION	10:30 AM	1	1217754
4	NBC	Nov. 2, 2011	TONIGHT SHOW	12:04 AM	5	1019451
5	CBS	Jun. 17, 2013	CBS THIS MORNING-SUS GOOD	8:45 AM	81	1932082

TABLE B-continued

6	ABC	Jul. 17, 2014	MORNING AMERICA	7:27 AM	28	773292
7	CBS	Mar. 28, 2012	CBS THIS MORNING-2	8:16 AM	52	458059
8	NBC	Aug. 16, 2013	TODAY SHOW III	10:32 AM	33	458575
...	NBC	Nov. 10, 2011	NBC NIGHTLY NEWS	6:46 PM	17	1199335
n	NBC	Jan. 10, 2012	TODAY SHOW III	10:37 AM	38	805361

Row	commercial time (sec)	Outflow total	Outflow total pct	demo	Outflow mean	Outflows d1 low
1 (cont)		12147	0.005662457	P18-49	0.014647	0.003356779
2 (cont)		0	0	M18-49	0.010844993	-0.000762766
3 (cont)		87002	0.054447781	P25-54	0.071940745	0.041541083
4 (cont)		39113	0.014717974	P18-49	0.016221857	0.00267859
5 (cont)		56525	0.006745419	P2	0.008068478	0.002154121
6 (cont)		2052	0.000857852	F18-49	0.007278906	0.002241878
7 (cont)	60	27901	0.01651494	F25-54	0.00723593	-8.06228E-05
8 (cont)		9362	0.007331325	P18-49	0.008661642	-0.000713091
... (cont)	4	22325	0.010722672	F25-54	0.011335007	0.002530907
n (cont)	60	53568	0.026755278	P25-54	0.007763335	-0.000839376

Row	Outflows d1 high	Outflows d2 low	Outflows d2 high
1 (cont)	0.025937221	0	0.037227443
2 (cont)	0.022452752	0	0.03406051
3 (cont)	0.102340407	0.011141421	0.132740069
4 (cont)	0.029765124	0	0.04330839
5 (cont)	0.013982836	0	0.019897193
6 (cont)	0.012315933	0	0.01735296
7 (cont)	0.014552483	0	0.021869035
8 (cont)	0.018036374	0	0.027411107
... (cont)	0.020139107	0	0.028943206
n (cont)	0.016366046	0	0.024968757

The traffic module 334 includes computer logic executable by the processor(s) 104 to process the measurement data, and generate, store, and/or provide performance summaries including show traffic statistics. A show performance summary (also referred to herein simply as performance summary) means data reflecting the performance of a show, such as the number of impressions by viewers, viewer traffic inbound to the show, viewer traffic outbound from the show, commercial occurrence data, ratings, viewer demographic data, show details (type, timing, duration, genre, network, subject matter, etc.), and so forth. While the users of the platform are described as viewers in some contexts, it should be understood that the term viewer includes any type of audience member, such as a viewer, a listener, etc. In some implementations, a show performance summary may reflect the show specifically and/or, in some cases, the timeslot associated with the show.

By way of example and not limitation, the traffic module 334 may program the processor(s) 104 to perform one or more of the following operations: generate and/or format a show performance summary; generate a comparison of viewer traffic between the selected show or timeslot and competing shows and/or timeslots over duration of a selected show or timeslot; calculate a percentage of total viewer loss at certain time intervals over duration of a selected show and/or timeslot; determine a total number of viewers for each time interval over a duration of a selected show and/or timeslot; determine a viewer gain percentage of each inbound source at each time interval over a duration of a selected show and/or timeslot; determine a viewer loss percentage of each outbound source at each time interval over a duration of a selected show and/or timeslot; and for

a selected show and/or timeslot, rank inbound sources based on respective viewer gains and outbound sources based on respective viewer losses.

In some implementations, the traffic module 334, when executed, may determine analysis information based on a variety of factors in order to ascertain the reasons why a certain data metric, such as the current loss rate, differs from historical and/or average values of that data metric. For example, in some instances, the traffic module 334 may determine that the loss rate at a particular time interval exceeded two standard deviations. The traffic module 334 may then evaluate which of the factors (e.g., as shown in one or both of the tables above) differ from their historical and/or average values beyond a pre-determined dynamic or static threshold. For example, the traffic module 334 may determine that at a time interval a large quantity of viewers left the first show and that at that moment the President's State of the Union was being broadcast on a different television network. Upon identifying one or more factors for a given data point, the traffic module 334 may include data describing the factor(s) in the show performance summary, and the visualization module 308 (e.g., the loss chart module 318) may present a graphical interface element (e.g., a visual indicator or overlay associated with the data point) that textually and/or graphically describes the factor(s) attributing to the variance in data from a normal or average threshold. It should be understood that this analysis information and process is provided as an example and that other methods and information are possible and contemplated herein.

The traffic module 334 is coupled to the data store 108 to store, retrieve, and/or manipulate data stored therein and

13

may be coupled to the aggregation module 332, the server 336, the visualization module 308, and/or other components of the system 300 to exchange information therewith. For example, the traffic module 334 may store, retrieve, and/or manipulate the aggregated measurement data 120, the performance summaries, and/or any other suitable data in the data store 108, and/or may provide the any of the foregoing data to the server 336 (e.g., preemptively, responsive to a procedure call, etc.) and/or any other component of the system 300.

The server 336 includes computer logic executable by the processor(s) 104 to receive, process, and/or respond to content requests. The server 336 may include an HTTP(S) server, a REST (representational state transfer) service, or other suitable server type. The server 336 may receive content requests (e.g., product search requests, HTTP(S) requests) from client devices 306, cooperate with the traffic module 334 and/or the aggregation module 332 to determine the content, retrieve and incorporate data from the data store 108, format the content, and provide the content to the client devices 306. A non-limiting example of the content provided by the server 336 includes performance summaries, as discussed elsewhere herein.

In some instances, the server 336 may format the content (e.g., a performance summary) using a certain format and provide the content to a corresponding visualization module 308 for processing and/or rendering to the user for display. For instance, the content may include structured data and the server 336 may format it using XML, JSON, etc., although other suitable data formats are also contemplated. The visualization module 308 may generate graphical data based on the structured data, as discussed elsewhere herein.

In further examples, the content generated by the server 336 may include other markup (e.g., HTML, etc.), style sheets (e.g., CSS, XSL, etc.), graphics, and/or scripts (e.g., JavaScript, ActionScript, etc.), and the client device 306 may interpret the content and render an interactive Web User Interface (WUI) (e.g., in some instances, the dynamic user-interactable graphical interface 322) for display on the display 116, although it should be understood that other suitable formats and/or configurations are also possible and contemplated. Using the user interfaces presented by the client device 306, a user can input commands selecting various user actions. For example, using these interfaces users can manipulate interactive graphical elements, such as the elements of the dynamic user-interactable graphical interfaces discussed elsewhere herein, drill-down on various aspects of the displayed visuals and data, access further content (e.g., corresponding webpages and/or other content, such as local and online files, etc.).

The server 336 may be coupled to the data store 108 to store retrieve, and/or manipulate data stored therein and may be coupled to the traffic module 334 and/or the aggregation module 332 to facilitate its operations. In some implementations, the server 336 may allow a user on a client device 306 to more directly access various functions of the traffic module 334 and/or the aggregation module 332 using application interfaces thereof.

As depicted in FIG. 1, the computing system 100 may include a communication unit 102, processor(s) 104, memory(ies) 106, a data store 108, input device(s) 114, and/or a display 116 which may be communicatively coupled by a communication bus 110. The computing system 100 depicted in FIG. 1 is provided by way of example and it should be understood that it may take other forms and include additional or fewer components without departing from the scope of the present disclosure. For instance,

14

various components of the computing devices may be coupled for communication using a variety of communication protocols and/or technologies including, for instance, communication buses, software communication mechanisms, computer networks, etc. While not shown, the computing system 100 may include various operating systems, sensors, additional processors, and other physical configurations.

The components 308, 332, 334, and/or 336, and/or components thereof (e.g., 310, 312, 314, 316, and/or 318, as shown in FIG. 3), may be communicatively coupled by the bus 110 and/or the processor(s) 104 to one another and/or the other components of the computing system 100. In some implementations, the components 308, 332, 334, and/or 336 may include computer logic storable in the memory(ies) 106 and executable by the processor(s) 104, and/or implemented in hardware (e.g., ASIC, FPGA, ASSP, SoC, etc.), to provide their acts and/or functionality. In any of the foregoing implementations, these components 308, 332, 334, and/or 336 may be adapted for cooperation and communication with the processor(s) 104 and the other components of the computing system 100.

The processor(s) 104 may execute software instructions by performing various input, logical, and/or mathematical operations. The processor(s) 104 may be physical and/or virtual, and may include a single core or plurality of processing units and/or cores. In some implementations, the processor(s) 104 may be capable of generating and providing electronic display signals to a display device, supporting the display of images, capturing and transmitting images, performing complex tasks, etc. In some implementations, the processor(s) 104 may be coupled to the memory(ies) 106 via the bus 110 to access data and instructions therefrom and store data therein. The bus 110 may couple the processor(s) 104 to the other components of the computing system 100 including, for example, the memory(ies) 106, the communication unit 102, the input device(s) 114, the display 116, and the data store 108.

The memory(ies) 106 may store and provide access to data to the other components of the computing system 100. The memory(ies) 106 may be included in a single computing device or a plurality of computing devices. In some implementations, the memory(ies) 106 may store instructions and/or data that may be executed by the processor(s) 104. For example, the memory(ies) 106 may store one or more of the aggregation module 332, the server 336, the traffic module 334, the visualization module 308, and/or their respective components, depending on the configuration. The memory(ies) 106 are also capable of storing other instructions and data, including, for example, an operating system, hardware drivers, other software applications, databases, etc. The memory(ies) 106 may be coupled to the bus 110 for communication with the processor(s) 104 and the other components of computing system 100.

The memory(ies) 106 may include a non-transitory computer-usable (e.g., readable, writeable, etc.) medium, which can be any non-transitory apparatus or device that can contain, store, communicate, propagate or transport instructions, data, computer programs, software, code, routines, etc., for processing by or in connection with the processor(s) 104. In some implementations, the memory(ies) 106 may include one or more of volatile memory and non-volatile memory (e.g., RAM, ROM, hard disk, optical disk, etc.). It should be understood that the memory(ies) 106 may be a single device or may include multiple types of devices and configurations.

15

The bus **110** can include a communication bus for transferring data between components of a computing device or between computing devices, a network bus system including the network **302** or portions thereof, a processor mesh, a combination thereof, etc. In some implementations, the aggregation module **332**, traffic module **334**, server **336**, visualization module **308**, and/or various other components operating on the computing system **100** (operating systems, device drivers, etc.) may cooperate and communicate via a communication mechanism included in or implemented in association with the bus **110**. The software communication mechanism can include and/or facilitate, for example, inter-method communication, local function or procedure calls, remote procedure calls, an object broker (e.g., CORBA), direct socket communication (e.g., TCP/IP sockets) among software modules, UDP broadcasts and receipts, HTTP connections, etc. Further, any or all of the communication could be secure (e.g., SSH, HTTPS, etc.).

The communication unit **102** may include one or more interface devices (I/F) for wired and wireless connectivity among the components of the system **300**. For instance, the communication unit **102** may include, but is not limited to, various types known connectivity and interface options. The communication unit **102** may be coupled to the other components of the computing system **100** via the bus **110**. The communication unit **102** may be electronically coupled to the network **302**. In some implementations, the communication unit **102** can link the processor(s) **104** to the network **302**, which may in turn be coupled to other processing systems. The communication unit **102** can provide other connections to the network **302** and to other entities of the system **300** using various standard communication protocols.

The input device(s) **114** may include any device for inputting information into the computing system **100**. In some implementations, the input device(s) **114** may include one or more peripheral devices. For example, the input device(s) **114** may include a keyboard, a pointing device, microphone, an image/video capture device (e.g., camera), a touch-screen display integrated with the display **116**, etc.

The display **116** may be any device capable of outputting information from the computing system **100**. The display **116** may include one or more of a display (LCD, OLED, etc.), touch-screen display, a haptic device, audio reproduction device, a printer, a 3D printer, etc. In some implementations, the display **116** is a display that may display electronic images and data output by the computing system **100** for presentation to a user **106**. In some implementations, the computing system **100** may include a graphics adapter (not shown) for rendering and outputting the images and data for presentation on display **116**. The graphics adapter (not shown) may be a separate processing device including a separate processor and memory (not shown) or may be integrated with the processor(s) **104** and the memory(ies) **106**.

The data store **108** is an information source for storing and providing access to data. The data stored by the data store **108** may be organized and queried using various criteria including any type of data stored by them, such as a show identifier, customer identifier, IP address, demographics data, time and/or date, content provider, etc. The data store **108** may include data tables, databases, or other organized collections of data. Examples of the types of data stored by the data store **108** may include, but are not limited to, measurement data **120**, user data **126**, etc., as discussed elsewhere herein.

16

The data store **108** may be included in the computing system **100** or in another computing system and/or storage system distinct from but coupled to or accessible by the computing system **100**. The data store **108** can include one or more non-transitory computer-readable media for storing the data. In some implementations, the data store **108** may be incorporated with the memory(ies) **106** or may be distinct therefrom.

In some implementations, the data store **108** may store data associated with a database management system (DBMS) operable on the computing system **100**. For example, the DBMS could include a structured query language (SQL) DBMS, a NoSQL DBMS, a file system, flat files, various combinations thereof, etc. In some instances, the DBMS may store data in multi-dimensional tables comprised of rows and columns, and manipulate, e.g., insert, query, update and/or delete, rows of data using programmatic operations.

The user data **126** may include profiles for each of the users of the system **300**, such as content providers and/or other stakeholders of the shows. The user data **126** may be correlated with the other types of data in the data store **108**, for example **120**. A given user's profile may include the user's user account and attributes describing the user. The user account may include information associated with the user's identity on the services provided by the system **300**, such as a username, password, preference data, employer information, payment information, etc. The attributes may characterize the user's preferences and/or identity.

In some implementations, the user data **126** may include data defining user access to services of the analytics server **330**, visualization module **308**, etc. In some instances, the user data **126** may define permissions, preferences, browsing data, user storable information, and so forth. For example, a specific user may be permitted to log into that user's account and view only that information pertaining to that user (e.g., as it relates to the user's job or role); such as show performance summary and/or analytics configured for/by that user and/or reflecting the performance of the show(s) and/or network(s) with which that user is associated.

FIGS. 2A-2F illustrate a dynamic user-interactable graphical interface **322** generated using a show performance summary. The dynamic user-interactable graphical interface **322** provides a visual comparison of viewer traffic between a target (e.g., first show) and one or more competing shows and/or networks. More particularly, in the depicted example, the interface **322a** displays performance data for a first show (e.g., the Today Show) and one or more competing shows over the certain timeframe (e.g., 7-9 AM) across discrete time intervals.

The interface **322** includes a number of static and dynamic elements configured to efficiently present, compare, and allow interaction with information from a show performance summary. As shown, the interface **322** may include a first show identifier **202**, a traffic chart **204**, a traffic loss chart **206**, a graphical traffic meter **208**, a source comparison chart **260**, a applicable time region **214**, a slider **216** including a handle **220**, a time range region **218**, and a time selector **222**, as well as various other data display, filtering, and interaction tools. The different states of the interface **322** depicted in FIGS. 2A-2F are respectively labeled **322a** . . . **322f**.

In the interface **322**, the traffic chart **204**, the traffic loss chart **206**, the graphical traffic meter **208**, the source comparison chart **260** (and/or other content regions) are dynamically interconnected by the visualization module **308** and configured by it to be synchronously updated based on user

17

interaction with the interface **322** and/or data being received. For instance, input received from an input device **114** causes the visualization module **308** to synchronously update all applicable elements of the interface **322** to reflect the statistics that correspond to that input.

In some implementations, a user can interact with the interface **322** using a draggable user interface element that is used to select a discrete time interval within the interface **322**, such as the slider **216**. In an example, by dragging the slider **216** through a range of times **218**, a user may select a discrete time interval, which in turn causes the visualization module **308** to synchronously update applicable graphical and/or textual data displayed by the different content regions of the interface **322**, such as **202**, **204**, **206**, **208**, and/or **260**. For example, the show performance summary may include various data, such as the reach, outflow, average audience, etc., statistics (e.g., see Tables A and B), as described elsewhere herein.

In the depicted implementation, the slider **216** includes a virtual handle **220** that may be used by the user to select and drag the slider **216**. For example, the virtual handle **220** may be draggable within the dynamic user-interactable graphical interface **322** by the user to isolate the viewer traffic associated with a certain discrete time interval from among the discrete time intervals of the viewer traffic. More particularly, a user may, using an input device **114**, select the discrete time interval by dragging the handle **220** to a certain position within the traffic loss chart **206**, making a selection (e.g., clicking, tapping, etc.) at a certain location within the traffic chart **204** or the traffic loss chart **206**, by interacting with the applicable time display **214**, or performing other suitable actions.

Other time selections mechanisms are also possible and contemplated. For instance, the selected time interval may be indicated textually and/or graphically, may be selected using a drop-down menu, a dynamic slider that automatically follows the user's pointer device, point sensitive content regions (e.g., **204**, and **206**) and can be clicked or tapped using the input device **114** to automatically set the discrete time interval, by selecting a time depicted in the time range region **218**, a voice command indicates the interval, a hand gesture captured by a camera of the user's computer and processed by the visualization module **308**, etc. In further implementations, instead of selecting a specific point in time, the slider **216** and/or handle **220** could be configured to select a time segment (time subrange), (e.g., over which values may be summed or averaged).

In the depicted implementation, the time range region **218** reflects the time range of the performance data being displayed in the interface and the current time selector **222** is a user interface element selectable by the user to scroll through/select the data to display in the content regions **204**, **206**, **208**, **260**, and/or **218**.

The user may interact with the time range region **218** using the input device **114** to select (e.g., by dragging the times, scrolling, pinching, entering a value or range of values, entering a time range or interval resolution, etc.) the time range to display on the interface **322** (e.g., limit the displayed data to). In some implementations, the interface **322** may additionally or alternatively include the current time selector **222**, which, when selected by a user, updates the range of times depicted in **218** as well as the corresponding data in the other elements **202**, **204**, **206**, **208**, and/or **260** of the interface **322**. The current time selector **222** allows the user to scroll back in time to view earlier performance data as well as scroll to the current time to expose a "live" (e.g., realtime/near realtime) view.

18

For instance, in these or other implementations, the visualization module **308** may automatically scroll or refresh the content region, based on real-time performance data being automatically received for the shows (e.g., streamed to) by the visualization module **108**, to automatically reflect the most current statistics. Additionally, although FIGS. **2A-2F** illustrate synchronous updating of various elements of the interface **322** based on the selection of a time interval, synchronous updating may also be performed based on the various other filter and input selections, as described elsewhere herein.

The traffic chart **204** displays a total number of impressions over a range of discrete time intervals. As shown in FIG. **2B**, the traffic chart **204** includes a traffic chart legend **224** and a chart region **225**. The traffic chart legend **224** includes indicators for a first show **230**, one or more competing shows **232a . . . 232n**, and commercials **234**, although other configurations are possible. The chart region **225** includes visual representations of traffic rates **226a . . . 226n**. The traffic rates **226a . . . 226n** correspond to the first show **230** and competing show(s) **232a . . . 232n**, and may be visually differentiated using different, visually distinguishable graphing elements (e.g., line types, colors, etc.).

The commercial indicator **234** indicates the occurrence of commercials over the depicted time frame. The commercial indicator **234** is linked to the commercial overlays **228** in the chart region **225**. The commercial overlays **228** correspond to commercial occurrence data and are overlaid with visual representations of traffic rates **226a . . . 226n**. The commercial overlays **228** may be interactable and upon being interacted with (e.g., selected), the traffic chart module **312** may display a region including content describing that particular commercial occurrence (e.g., identity, duration, sponsor, an audio or audiovisual preview of the commercial via an embedded player (e.g., see FIG. **8**), etc., associated with the commercial). The user may also toggle the commercial overlays **228** on and off by selecting the commercial indicator **234**.

The traffic rates **226a . . . 226n** reflect the total number of impressions for the corresponding shows. As shown in the figures, each traffic rate may be displayed in a graphical format (e.g., in a bar, pie, line, bubble, or other chart) where traffic rates for a first show and competing shows are visually compared. The visual depiction of the various traffic rates may be linked to the indication of that particular show (e.g., **230** or **232a . . . 232n**) in the traffic chart legend **224**. For example, the traffic rate **226b** may be linked to show indicator **230**, which may be selected by the user to change which show is displayed, highlight show specific data, and/or dynamically update various corresponding elements **202**, **204**, **206**, **208**, and **260** to reflect data pertaining to that specific show. For example, hovering over the show indicator **230** may instantly highlight the traffic rate **226b** and/or update one or more other elements of the interface **322** to reflect data for that specific show (e.g., toggling the show corresponding to the show indicator **230** to be the first show, as discussed elsewhere herein according to some implementations).

In some implementations, the traffic chart module **312** generates/updates the traffic chart **204** in response to a signal from the interface module **316**, which indicates the range of times (e.g., as selected in the time range region **218**) and the selected time interval (e.g., corresponding to the position of the slider **216** along the time range region **218**). The traffic chart module **312** accesses the performance summary data for each of the first show and the one or more selected shows and generates the visual representations of the traffic rates

226a . . . 226n and an impressions metric **236** using the performance summary as indexed by time intervals. For example, the data in Table A illustrates a specific program (NBC Nightly News) and statistics about the specific program including the average audience indexed over a range of time intervals, which is input into the traffic chart module **312** to generate the elements of the traffic chart **204**.

Similarly, depending on the configuration, the traffic chart module **312** or the interface module **316** may access the commercial occurrence data indexed by time interval in the show performance summary (e.g., as indicated in the columns labeled commercial time, promo time, non-program time, etc., in Table A). For example, the traffic chart module **312** may process the commercial occurrence data from the show performance summary and generate graphical overlays and overlay them in the traffic chart **204** with the time segment(s) during which commercials occurred.

In some implementations, the visualization module **308** may be configured to display supplemental information for a show automatically or responsive to a user selection, such as a discrete time interval selection or a selection of a show. More particularly, the visualization module **308**/components thereof may be configured to display relevant supplemental data for any of the data depicted in regions **204**, **206**, **208**, **260**, etc. For example, upon hovering over certain data (e.g., outliers, dips, percentages, inbound or outbound network, meter, etc.), the visualization module **308**/components thereof may display additional details relevant to that data.

By way of further example, as a discrete time interval is selected using the slider **116**, the traffic chart module **312** may dynamically update an impressions metric **236** to reflect the total number of impressions at that time interval. This is advantageous as it allows a user to easily determine the traffic rate at the time interval for the first show. In another further, example, responsive to user interaction using an input device **114** (e.g., a hovering over or selecting a given traffic rate **226a . . . 226n**), the traffic chart module **312** causes the interface **322** to dynamically display details about the show corresponding to that selection (e.g., the episode, time and date of first airing, actors in show, demographics associated with show, show rating information, a media clip of the show at a selected time interval, etc.) in a corresponding graphical region (e.g., an overlay, popup, window, content region, etc.), and so forth.

The traffic loss chart **206** displays information pertaining to the traffic loss over the time range **218**, which, like the traffic chart **204**, is comprised of a multiplicity of discrete time intervals. As shown more particularly in FIG. 2C, the traffic loss chart **206** displays the percentage of viewer traffic associated with the first show that is being lost at any given point in within the selected time range. The loss rate **238** is shown as having a possible range from 0% to some percentage above 0%, although it should be understood that other variations are also possible, such as where the polarity of the data is switched.

The traffic loss chart **206** may also include a visual representation of the average loss **240** and one or more standard deviations **246a** and **246b** from the average. The average loss **240** may be defined as any relevant value, such as an average (e.g., mean, median, mode, etc.) loss for a first show or for a first network over a specific time period (e.g., weeks, months, years, etc.). Alternatively, the average loss **240** may be defined as an average over competing shows or networks. In some implementations, the definition of the average may be user definable by the user selecting the graphical element **244** in the traffic loss chart legend **242** corresponding to the average loss **240**.

In some implementations, the loss chart module **318** generates/updates the traffic chart **206** in response to receiving a signal from the interface module **316**, which indicates the range of times (e.g., as selected in the time range region **218**) and the selected time interval (e.g., corresponding to the position of the slider **216** along the time range region **218**). The loss chart module **318** accesses the performance summary data and generates the graphical representation of the loss rate **238**, average loss **240**, standard deviations **246**, emphasized markers **248**, impressions lost metric **250**, and/or the time interval metric **252** using the performance summary as indexed by time intervals. For instance, the data in Tables A and/or B illustrate statistics about shows including total outflow, average outflow, and standard deviations of outflows indexed over a range of time intervals for a plurality of shows, which data is input into the loss chart module **318** to generate the elements of the traffic chart **204**. For example, the loss chart module **318** may retrieve/receive the total outflow (e.g., the loss rate) over a range of times and display it graphically in the traffic loss chart **206**.

Similarly, depending on the configuration, the loss chart module **318** or the interface module **316** may access the commercial occurrence data indexed by time interval in the show performance summary (e.g., as indicated in the columns labeled commercial time, promo time, non-program time, etc., in Table A). For example, the loss chart module **318** may process the commercial occurrence data from the show performance summary and generate graphical overlay(s) **228** and overlay them in the traffic loss chart **206** with the time segments that which include the commercial occurrences.

The loss chart module **318** and/or the traffic module **334** may determine one or more standard deviations from the average loss **240** and generate and display a visual representation of the standard deviations. For example, as displayed in FIG. 2C, a first and a second standard deviation **246a** and **246b** from the average are displayed in the traffic loss chart **206**.

In some implementations the loss chart module **318** may determine if, and at which time intervals, the loss rate **238** exceeds a threshold. In some instances, the threshold corresponds to a quantity (e.g. percentage) greater than two standard deviations from the average **240**. When it is determined that the loss rate **238** exceeds the threshold, the loss chart module **318** may present the point at which the loss rate **238** exceeds the threshold in such a way as to draw emphasis to the point. For example, that point may be displayed with an emphasized marker (e.g., a flashing, red circle, etc.) **248** around a point on a graph of the loss rate **238**. Additionally, the emphasized marker **248** may be selectable (e.g., clickable, tappable, etc.) causing the loss chart module **318** to display a content region including analysis information to the user. This analysis information may include one or more predictions (e.g., ordered from most likely to less likely) explaining why the data for that particular data point/point in time exceeded the threshold, as determined by the traffic module **334**.

In some implementations, the traffic loss chart **206** may include a traffic loss chart legend **242**. Although other values may be present in the traffic loss chart legend **242**, as depicted in the interface **322**, the legend may include representations corresponding to the percent of loss **243** (e.g., the loss rate **238**), the average loss **244**, and one or more standard deviations **245a** and **245b**. In a similar manner to the traffic chart legend **224**, as discussed above, the individual sections and/or elements within the sections of the traffic loss chart legend **242** may be color and/or pattern-

21

coded and may be interactable to affect which of the elements of the traffic loss chart **206** are highlighted or displayed. For instance, they can be used to filter the values and factors contributing to the traffic loss chart **206**, and so forth.

In some implementations, the traffic loss chart **206** may additionally or alternatively include other elements, such as a total impressions lost metric **250** and a time interval metric **252**. The total impressions lost metric **250** may reflect the percent of total traffic (e.g., a percentage or a total value) lost over a time period (e.g., 15 minutes, an hour, etc., before, surrounding, or after a reference time, such as a current time or the selected time interval). The time interval metric **252** is a representation of a viewer loss percentage at a selected discrete time interval (e.g., position C of slider **216** in FIG. 2C).

The graphical traffic meter **208** is configured to visually comparatively display an instantaneous (e.g., at a time interval, real time, etc.) inbound viewer rate and an outbound viewer rate corresponding to a selected time interval (e.g., position D of slider **216**). As shown in FIG. 2D, the traffic meter may include an inbound funnel portion **254** and an outbound funnel portion **256**, each corresponding in size to the number (e.g., as a ratio) of inbound and outbound viewers. Additionally, in some implementations, the traffic meter **208** may include a comparative portion **258** (e.g., donut chart element), which visually graphically displays the ratio of inbound viewers to outbound viewers using visually distinguishable segments (e.g., colored segments, textured segments, etc.). In some instances, two visually distinguishable segments are present in the comparative portion **258** as shown, such that each segment corresponds to and is connected with the inbound funnel portion **254** and outbound funnel portion **256**, respectively.

In some implementations, the meter module **314** generates the graphical traffic meter **208** in response to a signal from the interface module **316**, which indicates a selected time interval (e.g., corresponding to the position of the slider **216** along the time range region **218**). The meter module **314** determines the configuration (e.g., size, color, orientation) of the inbound funnel portion **254**, the outbound funnel portion **256**, and the comparative portion **258** using the performance summary at a selected time interval. For example, the meter module **314** may retrieve/receive the total inbound traffic and the total inbound traffic (e.g., as a ratio illustrated by the average audience change or the reach change in Table A, or as values represented by the various switch in and out flow values for each source as illustrated in Table A) for a selected time interval, which it uses to calculate and generate the configuration of the traffic meter **208** and its component elements.

The source comparison chart **260** visually comparatively displays inbound sources and outbound sources for a selected time interval. The source comparison chart **260** may include an inbound source list **210** and an outbound source list **212**. Each of the lists **210** and **212** may include a percentage representing the percentage of the total inbound or outbound traffic represented by each source. In some implementations, as in the depicted implementation, the inbound source list **210** is connected to the inbound funnel portion **254** and the outbound source list **212** is connected to the outbound funnel portion **256**. This configuration of the graphical traffic meter **208** and source comparison chart **260**, where each of **210** and **254** as well as **212** and **256** are visually linked, is particularly beneficial, because it allows a user to quickly ascertain whether the total number of impres-

22

sions is increasing or decreasing at any given moment as well as the ratios of sources responsible for that change.

As with the traffic meter **258**, in some implementations, the meter module **314** generates the source comparison chart **260** in response to a signal from the interface module **316**, which indicates a selected time interval. The meter module **314** determines the inbound source list **210** by retrieving/receiving the switch in rates and networks (e.g., shows) for each of the sources from the show performance summary (e.g., as illustrated in the switch in 1, 2, 3, etc., sets of columns in Table A) for the selected time interval. Similarly, the meter module **314** determines the outbound source list **212** by retrieving/receiving the switch out rates and networks (e.g., as illustrated in the switch out 1, 2, 3, etc., sets of columns in Table A).

The organization of the components **312**, **314**, and **318** of the visualization module as described is particularly beneficial as it allows the visualization module **308** to rapidly (e.g., nearly instantaneously) process a large quantity of information such as is provided in the tables above while providing the information in a format, which is easily digestible for a human using a user device **306** as particularly illustrated in FIGS. 2A-3.

The progression of the dynamic synchronous changes to the interface **322** shown in FIGS. 2A-2F based on the respective positions A-F of the slider **216** are now described. More particularly, the interfaces **322a-322f** in FIGS. 2A-2F display performance data for a first show (e.g., the Today Show) and one or more competing shows over the certain timeframe (e.g., 7-9 AM) across certain discrete time intervals selected by the user. For instance, FIG. 2A displays the slider **216** at position A in interface **322a** corresponding to a selected interval at 7:00 AM, which is when the first show began. At position A, traffic rate **226b** for the first show increased more than competing shows as shown in traffic chart **204**, and as such traffic loss is decreasing as shown in loss chart **206**. Further, as shown in the inbound source list **210**, at position A, 95.7% of the inbound traffic was from viewers that just turned on their TVs, with the remainder of viewers coming from competing content providers.

FIG. 2B displays the slider **216** at position B in interface **322b** corresponding to a selected interval at 7:44 AM. At position B, traffic rate **226b** for the first show was increasing slightly as shown in traffic chart **204** and indicated in the proportionate size of the inbound funnel portion **254** (larger) to the outbound funnel portion **256** (smaller) as well as the comparative portion **258** of the traffic meter **208**. Additionally, the loss rate **238** shown in the loss chart **206** is at a value less than the average loss **240**. Further, as shown in the inbound source list **210**, at position B, 76.3% of the inbound traffic was from viewers that just turned on their TVs, with the remainder of viewers coming from competing content providers.

FIG. 2C displays the slider **216** at position C in interface **322c** corresponding to a selected interval at 7:47 AM. At position C, traffic rate **226b** (e.g., the total number of impressions) for the first show was nearly level as shown in traffic chart **204**, but there was a significant loss rate **238**, as indicated in the loss chart **206**. The sizes of the inbound funnel portion **254** and the outbound funnel portion **256** as well as the comparative portion **258** of the traffic meter **208** indicate that although the loss rate **238** is greater than the average loss **240** at 7:47 AM and is decreasing, the inbound rate is significant enough that the total traffic rate **226b** is essentially level. Further, as shown in the outbound source list **212**, at position C, while 61.1% of the outbound traffic

23

was from viewers that turned off their TVs, 27.2% of outbound traffic went to a single competing source.

FIG. 2D displays the slider **216** at position D in interface **322d** corresponding to a selected interval at 7:48 AM. At position D, traffic rate **226b** for the first show was decreasing significantly as shown in traffic chart **204** and indicated in the proportionate size of the inbound funnel portion **254** (smaller) to the outbound funnel portion **256** (larger) as well as the comparative portion **258** of the traffic meter **208**. Additionally, the loss rate **238** shown in the loss chart **206** is at a value greater than two standard deviations from the average loss **240** and is indicated by the graph of the loss rate **238** and the marker **248**. In contrast to the data displayed in the outbound source list **212** in FIG. 2C, 82.6% of outbound traffic is a result of viewers turning off their TVs, while only 5.7% and 5.2% of traffic is changing to the second and third sources, respectively. A likely explanation for this change, is that an increasing number of viewers are leaving for work, which explanation could be provided via the interface **322**, as described elsewhere herein.

FIG. 2E displays the slider **216** at position E in interface **322e** corresponding to a selected interval at 8:15 AM. At position E, traffic rate **226b** for the first show was increasing very slightly as shown in traffic chart **204** and as indicated in the proportionate size of the inbound funnel portion **254** to the outbound funnel portion **256** as well as the comparative portion **258** of the traffic meter **208**. Additionally, the loss rate **238** shown in the loss chart **206** is at a value less than the average loss **240**. Further, as shown in the inbound source list **210**, at position E, effectively 100% of the inbound traffic was from viewers that just turned on their TVs, but perhaps more interestingly, the outbound source list **212** indicates that 95.3% of the outbound traffic was from viewers turning off their TVs with the relatively small remainder going to a single other outbound source.

FIG. 2F displays the slider **216** at position F in interface **322f** corresponding to a selected interval at 8:17 AM. At position F, traffic rate **226b** for the first show was decreasing quickly as shown in traffic chart **204** and indicated in the proportionate size of the inbound funnel portion **254** (smaller) to the outbound funnel portion **256** (larger) as well as the comparative portion **258** of the traffic meter **208**. Additionally, the loss rate **238** shown in the loss chart **206** is at a value greater than one standard deviation from the average loss **240**. As shown in the outbound source list **212**, at position F, 34%, 32%, and 17.9% of the traffic loss is going to the first three sources respectively, with only 32% of the traffic loss being from viewers turning off their TVs. Further, it can be seen from the traffic chart **204**, that the first traffic rate **226b** of the first show is performing much worse than the traffic rates **226a** and **226c** of the competing shows.

The interface **322** may additionally or alternatively include various other tools for filtering, interaction, and display of the show performance summary. For example, as shown in FIG. 2E, the interface **322** may include interface tools **262** (e.g., to change settings, make calculations, and request help, etc.) and filtering tools **264**. The filtering tools **264** may perform the same or additional functions as those described above in reference to interactions with other elements of the interface **322**. For example, the filtering tools **264** may include a calendar **266**, which allows a user to select a date or date range over which to view show performance summary data. In another example, the filtering tools **264** may include a time **268**, which allows a user to select a range of times **218**, a start time, an end time, a time of day (e.g., primetime), etc.

24

The filtering tools **264** may include a show or network filter **270**, such as the show menu discussed above. Selection of this filter may allow a user to specify a first show or network and/or one or more competing shows or networks. In some instances, the show or network filter **270** includes a display reflecting the selected first show or network, that is, the show or network to which other shows or networks are compared and for which the show performance summary is generated.

The filtering tools **264** may include a demographics filter **272**, which allows a user to select one or more specific demographics for which data is displayed. For example, demographics that may be used for filtering may include age, gender, geographic location, household income, viewing patterns habits or history, etc., depending on availability of demographic data linked to the data inputs in the performance summary.

The shows depicted in the interface **322** may be selected using a show menu (e.g., not shown) and an input device **114**. The step of selecting the shows may occur in an interface depicted prior to the presentation of the interface **322**, or may occur concurrently with or after the display of that interface. For example, the user may select using the input device **114** an element in the header region of the interface **322**, such as the show identifier element **202** or the traffic chart legend **224** (or elements thereof), and responsive thereto, show a graphical selection menu that includes a plurality of shows may be displayed. In some instances, the shows included in that region may be shows associated with certain content providers, shows the user has set as preferences or is authorized to select from, the popular shows of the day based on traffic, etc. The user may input using the input device **114** which show is the target show (the first show (e.g., **230**)) and the comparison shows (e.g., **232a** . . . **232n**). Upon making the selection, the visualization module **308** may request the relevant performance data and generate/refresh the interface **322** with the corresponding data.

In further implementations, the user may change, using the input device **114**, which show is the target show by highlighting the show of interest (e.g., by selecting it in the traffic chart legend **224** or the chart region **225**). For instance, the user may select using the input device **114** the first show indicator **230** or one of the competing show indicators **232a** . . . **232n** to change that show to the "first show" or target show, and the visualization module **308** may synchronously update each of the elements **202**, **204**, **206**, **208**, **210**, and **212** to reflect the selected show's performance, and, in some instances, a comparison of the performance of the show to that of the other shows.

Although the FIGS. 2A-2F describe the comparison of a first show and one or more contemporaneous competing shows, it should be understood that the techniques of the present disclosure are also applicable to non-contemporaneous shows. In some implementations, the traffic module **334** may process a show performance summary for a first show and one or more non-contemporaneous shows by matching features such as the time line of the shows, commercial occurrences, etc. For example, the traffic module **334** may match the beginning and ending times of shows such that the visualization module **308** displays the shows as though they were contemporaneous (although, perhaps some data may be mismatched or artificially adjusted, such as the visual overlays corresponding to commercial occurrence data for each show).

Examples of non-contemporaneous shows which may be compared using the techniques described herein include: similar types of shows occurring at different times; OTA,

25

on-demand, online streaming, and/or recorded shows; the same show or series (e.g., as in a television series) on previous occasions; a different show or series on the same network (e.g., at a different time, day, or season); and so forth.

FIG. 8 illustrates a further example dynamic user-interactable graphical interface **822** generated using the show performance summary. It should be understood that similar modules and techniques generate the interface **822** depicted in FIG. 8 as generate the interface **322** depicted in FIGS. 2A-2F. The description of these modules and techniques will not be repeated in detail here.

The interface **822** includes a number of static and dynamic elements configured to efficiently present, compare, and allow for user interaction. As shown, the interface **822** may include a first show identifier **802**, a traffic chart **804**, a traffic loss chart **806**, a slider **816**, a time range region **818**, a media preview region **890** (also called show preview region **890**), as well as and various other data display, filtering, and interaction tools. The generation and updating of the interface **822** occurs using the same or similar techniques as described in reference to the interface **322**. Similarly, a user can interact with the interface **822** using a draggable user interface element that is used to select a discrete time interval within the interface **822**, such as the slider **816**, to select a time interval.

The traffic chart **804** includes a visual representation of the traffic rate **826**, an impressions metric **836**, one or more commercial overlays **828**, and a show selector **880**. The elements **826**, **836**, and **828** are generated and reflect the same or similar type of data as within the elements **226**, **236**, and **228**, respectively. Similarly, the show selector **880** displays one or more currently selected shows (e.g., indications of a first show and/or one or more competing shows) and allows a user to select the shows in order to display traffic data in the traffic chart **804** for the selected shows. For example, the interface module **316** receives user input indicating a selected time interval and/or a show selected in the show selector **880**. The interface module **316** signals the traffic chart module **312** to generate the traffic chart **804**, which it does in the same or similar way as is described in detail in reference to FIGS. 2A-2F.

As with the traffic loss chart **206**, the traffic loss chart **806** displays information pertaining to the traffic loss over the time range **818**, which is comprised of a multiplicity of discrete time intervals. The traffic loss chart **806** may include visual representations of an average loss rate **840**, a loss rate deviation **846**, an emphasized marker **848**, a time interval metric **852**, one or more commercial overlays **828**, a first source loss rate **882**, a total loss rate **838**, and/or an outbound source selector **888**. The elements **840**, **846**, **848**, **852**, and **828** correspond to the elements **240**, **246**, **248**, **252**, and **228** described above.

The first source loss rate **882** includes a graphical representation of the total (e.g., as a percentage) traffic loss due to a first source, which representation may be toggled on or off using the outbound source selector **888**. Similarly, the total loss rate **838** includes a graphical representation corresponding to the total traffic lost at each time interval similar to the loss rate **238**. However, in some implementations, the total loss rate **838** may represent only the traffic loss due to the sources selected in the outbound source selector **888**. The outbound source selector **888** allows a user to toggle which sources are represented in graphical representations in the traffic loss chart **806**. For example, the interface module **316** receives user input indicating a selected time interval and/or sources selected in the out-

26

bound source selector **888**. The interface module **316** signals the loss chart module **318** to generate the traffic loss chart **806**, which it does in the same or similar way as is described in detail in reference to FIGS. 2A-2F.

As with the time range region **218**, the time range region **818** reflects the time range of the performance data being displayed in the interface, however, the time range region **818** may also include a loss rate mirror **839**. As shown, the loss rate mirror **839** is overlaid over the time range region **818**, to display an easily viewable representation of a loss rate (e.g., the loss rate **838**).

The media preview region **890** provides a preview of a media object of the show. The media object is a digital object, such as a graphics, video, and/or audio file of the show and is streamable or downloadable from the media server **350**. The preview of the show media object may be a digital preview associated with the selected time interval, such as but not limited to a media clip associated with the selected time interval (e.g., a clip of limited duration showing the before, during and after), the media (e.g., video) frame corresponding to the selected time interval, an animated image (e.g., a GIF) showing the same, the media object data with a position set to the selected time interval, etc., (e.g., using a seek(int time) function of an API of the media module **356**).

In some implementations, the media module **356** includes media player embedded in the media preview region **890**. For example, the media preview region **890** may include an embedded video player in an iframe object or other container backing the interface **822**. The media player interacts with an information source (e.g., local cache, the media server **350**, etc.) to retrieve the media object to be displayed and/or interacted with. In some implementations, metadata of a video clip of the show may be included in the data store **108**, indexed by the time interval, and used to display a video clip or frames of the video clip corresponding to the selected time interval. It should be understood that other implementations are possible and contemplated by the techniques described herein.

In some implementations, the media object is encoded using various formats and/or audio and video codecs. In some instances, the media object may be encapsulated into a container. The image formats, audio and video codecs, container formats, etc., may be open or proprietary, and may include any type. Example image formats may include but are not limited to GIF, JPEG, EXR, PNG, TIFF, etc., example audio and video codecs and formats may include but are not limited to ACC, MP3, Vorbis, etc., and example video codecs and formats may include but are not limited to MPEG-4, H.264, Theora, VP8, etc. The container file may package the media object and/or a data stream associated therewith in any known format including but not limited to FLV, WebM, ASF, ISMA, etc. It should be understood that in some instances the images of the media object or the media object itself be transcoded and/or converted to another image-based format.

In some instances, the media module **356** receives a media object (e.g., audio video stream, static image, audio from the media server **350** responsive to sending a media request to the media server **350**. In some instances, the media request is triggered upon page load and the media object or a portion thereof is downloaded and cached/buffered in the memory **106** for instant retrieval (so that any lag is imperceptible to the user). In other instances, the media request is a preview request triggered upon the user interaction with the data displayed in the dynamic user-interactable graphical interface (e.g., hovering over a data point using an input device,

27

selecting a certain data point/time increment using an input device, etc.). The preview request includes a corresponding time increment matching the user selected time interval and, responsive to receiving and processing the request, the media server **350** retrieves and provides the media object (e.g., frame(s), image, media stream positioned to the selected point in time, etc.) to the media module **356**, which may buffer and/or display it in the media preview region **890**.

In implementations where the media object is a video, the media preview region **890** displays the media object corresponding to a selected time interval. The media preview region **890** may in some cases include media player controls, such as a stop, play, pause, rewind, and fast-forward button, to control playback of the media object. For example, in some implementations, the user may select to play a video clip of a show, which is displayed in the media preview region **890**.

In some implementations, as the media object is played, the media module **356** continuously updates the position of the media preview region **890** to correspond to the relevant time increment. For instance, in FIG. 8, the media preview region **890** may incrementally be repositioned horizontally across the time range region **818** in the interface **822** such that the media preview region **890** remains adjacent to the corresponding time and show performance summary data (e.g., the traffic rate **826**, the loss rate deviation **846**, etc.).

In other example implementations, the media module **356** may automatically reposition the media preview region **890** based on input received from the input device **114**. For example, the input may reflect that the user is dragging the media preview region **890** across the interface **822** (e.g., by selecting and dragging the region **890** or the slider **816**), and the media module **356** may refresh the media preview region **890** with the media object/portion thereof that corresponds to the position of the media preview region **890** within the interface. In further examples, the media module **356** may reposition the media preview region **890** to follow a pointer controlled by the user and may refresh the content being displayed by the media preview region **890** accordingly. Other variations are also possible and contemplated.

FIG. 3 is a block diagram of an example system **300** for analyzing and enabling visualization of viewer traffic. The illustrated system **300** may include the client devices **306a . . . 306n** (also referred to herein individually and/or collectively as **306**), audience measurement systems **340a . . . 340n** (also referred to herein individually and/or collectively as **340**), which are electronically communicatively coupled via a network **302** for interaction with one another, although other system configurations are possible including other devices, systems, and networks.

The client devices **306a . . . 306n**, and their components, may be coupled to the network **302** via signal lines **304a . . . 304n**. The audience measurement systems **340a . . . 340n** may be coupled to the network **302** via signal lines **338a . . . 338n**. The analytics server **330** and its components may be coupled to the network **302** via signal line **328**. Users may access one or more of the devices of the system **300**. For example, as depicted, users may access and/or interact with the client devices **306a** and **306n**.

The client device **306** includes one or more computing devices having data processing and communication capabilities. The client device **306** may couple to and communicate with other client devices **306** and the other entities of the system **300** via the network **302** using a wireless and/or wired connection. Examples of client devices **306** may include, but are not limited to, mobile phones, tablets,

28

laptops, desktops, netbooks, server appliances, servers, virtual machines, TVs, etc. The system **300** may include any number of client devices **306**, including client devices of the same or different type. A plurality of client devices **306a . . . 306n** are depicted in FIG. 3 to indicate that the analytics server **330** and its components may aggregate measurement data from a plurality of devices and provide show performance information to a multiplicity of users via the client devices **306a . . . 306n**.

As depicted in FIG. 3, a client device **306** may include a visualization module **308** and a display **116**, although it may also or alternatively include the aggregation module **332**, the traffic module **334**, or components thereof.

As shown, the visualization module **308** may include a data handler **310**, a traffic chart module **312**, a meter module **314**, an interface module **316**, a loss chart module **318**, and a media module **356** it should be understood other configurations are also contemplated where some or all of the foregoing components are combined and/or further segmented into individual components, all of which are encompassed by the scope of this disclosure. For instance, in other implementations, one or more of the components, acts, and/or functionality of the visualization module **308** may be included on the analytics server **330** one or more of the components, acts, and/or functionality of the analytics server **330** may be included on the client device **306a**.

The data handler **310** may handle data requests and responses, and/or provide data to the other components of the system **300** (e.g., the client device **306**), such as the traffic chart module **312**, the meter module **314**, and/or the loss chart module **318**, as applicable.

The interface module **316** may be configured to capture and processes user interaction with the interface **322**, and provide the interactions (e.g., time selections, filter selections, etc.) to the various different components, such as the traffic chart module **312**, the meter module **314**, and/or the loss chart module **318**. The interface module **316** may also be configured to call and receive information from each of the other components of the visualization module **308**. For example, the interface module **316** receives input from a user device **306**, processes the input, and calls the other modules **308**, **310**, **312**, **314**, **318**, and **356** to perform their respective operations.

The traffic chart module **312** may process the show performance summary, which may include information such as viewer traffic comparison data and commercial occurrence data, that is received from server **336** or local storage, and generate and/or update a traffic chart based on the processed data and/or the user interaction(s) (e.g., time selected using handle **220**).

The meter module **314** may process ranked inbound and outbound sources from the performance summary to determine top inbound and outbound sources for a certain interval of a selected show or timeslot, and generate and/or update a source comparison chart **260** comparing total viewer gain vs. loss rates and listing top inbound and outbound sources based on the processed data and/or the user interaction(s) (e.g., time selected using handle **220**), as discussed in further detail elsewhere herein.

The loss chart module **318** may process viewer loss data from the performance summary received from the server **336** and/or local data storage and generate and/or update an interactive traffic loss chart **206** indicating viewer loss percentages over the duration of show or timeslot based on the processed data and/or the user interaction(s) (e.g., time selected using slider **216**), as discussed in further detail elsewhere herein.

29

The media module **356** programs the processor(s) **104** to retrieve, process, and display media objects based on user interaction with the dynamic user-interactable graphical interface, as discussed elsewhere herein. The media module **356** is capable of detecting input events (e.g., page loading, user input (e.g., user selection of time interval), default time interval selection, realtime position of media, etc.) and generating and positioning the show preview region **890**, updating the position of the show preview region **890**, and/or updating the media object being displayed thereby, etc.

The visualization module **308** may overlay (e.g., in cooperation with the foregoing modules) commercial data segments indicating locations of commercial breaks during showing (airing, playback, etc.) on any of the graphical images generated by the traffic chart module **312** and/or the loss chart module **318**, as discussed in further detail elsewhere herein.

The visualization module **308** may communicate via the network **302** with the server **336** to provide, request, and/or receive information, such as the performance summaries discussed elsewhere herein. The visualization module **308** may use any suitable networking or other communication protocol to interact with the other components of the system **300**, such as those discussed elsewhere herein.

The network **302** may include any number of networks and/or network types. For example, the network **302** may include, but is not limited to, one or more local area networks (LANs), wide area networks (WANs) (e.g., the Internet), virtual private networks (VPNs), wireless wide area network (WWANs), WiMAX® networks, personal area networks (PANs) (e.g., Bluetooth® communication networks), various combinations thereof, etc. These private and/or public networks may have any number of configurations and/or topologies, and data may be transmitted via the networks using a variety of different communication protocols including, for example, various Internet layer, transport layer, or application layer protocols. For example, data may be transmitted via the networks using TCP/IP, UDP, TCP, HTTP, HTTPS, DASH, RTSP, RTP, RTCP, VOIP, FTP, WS, WAP, SMS, MMS, XMS, IMAP, SMTP, POP, WebDAV, or other known protocols.

The analytics server **330** and the audience measurement systems **340** include computer hardware and software having data processing, storing, and communication capabilities, as discussed elsewhere herein. For example, the components **330** and/or **340** may include one or more hardware servers, server arrays, storage devices and/or systems, etc. In some implementations, the components **330** and/or **340** may include one or more virtual servers, which operate in a host server environment. As depicted, the analytics server **330** may include an aggregation module **332**, a traffic module **334**, and a server **336**, as discussed elsewhere herein.

In some implementations, the media server **350** transmits media streams (e.g., audio and/or video) to one or more client devices **306** and/or the analytics server **330**. The media streams may be live feeds or may be previously recorded, stored as media objects in a data store, and transmitted to the one or more client devices **306** or the analytics server **330** on demand, via delayed broadcast, etc. In some implementations, the media is streamed from the media server **350** via the network **302** (e.g., as illustrated by signal line **352**). In other implementations, a user can download an instance of the media objects from the media server **350** to a local repository for storage and local playback. In some implementations, the media server **350** may be configured to provide a series of images (frames, thumbnails, etc.) corresponding to the selected time interval, as

30

described in more detail in reference to FIG. **8**. In some instances, the media object is indexed by time, frame, or another suitable measure, so it, or the corresponding portion thereof, can be immediately be retrieved upon request by the media server **350** and/or media module **356**.

It should be understood that the system **300** illustrated in FIG. **3** is representative of an example system and that a variety of different system environments and configurations are contemplated and are within the scope of the present disclosure. For instance, various acts and/or functionality may be moved from a server to a client, or vice versa, data may be consolidated into a single data store or further segmented into additional data stores, and some implementations may include additional or fewer computing devices, services, and/or networks, and may implement various functionality client or server-side. Further, various entities of the system may be integrated into a single computing device or system or divided into additional computing devices or systems, etc.

FIG. **4** is a flowchart of an example method **400** for analyzing and enabling visualization of viewer traffic. At **402**, the visualization module **308** generates a dynamic user-interactable graphical interface (e.g., the interface **322**) using a performance summary including viewer traffic statistics for a first show and one or more competing shows, and at **404**, the visualization module **308** provides the dynamic user-interactable graphical interface for display on a display device.

In some implementations, the user-interactable graphical interface is generated responsive to receiving a user input. For instance, the interface module **316** receives the input from a user device **306** requesting the interface **322** (or an update thereof), in response to which the interface module **316** signals the data handler **310** to request a show performance summary from the analytics server **330**. The server **336** may communicate the request to the traffic module **334**, which generates the show performance summary based on information gathered by the aggregation module **332** (e.g., in advance, in response to information contained in the request from the data handler **310**, etc.) from at least one source, such as the audience measurement system **340a**. In some instances, the traffic module **334**, via the server **336**, transmits the show performance summary to the data handler **310**. The data handler **310** may store the show performance summary in non-transitory memory and/or provide it to other component(s) of the visualization module **308**. The various components of visualization module **308** may receive/retrieve the show performance summary and process it to generate and/or dynamically update various content included in dynamic user-interactable graphical interface, as discussed in further detail elsewhere herein. In further implementations, the data handler **310** may retrieve the show performance data from a local cache.

At **406**, the interface module **316** receives user input from a user input device selecting a time interval of a first show and one or more competing shows, and at **408**, the visualization module **308** updates the dynamic user-interactable graphical interface with a comparison of viewer traffic between the first show and one or more competing shows for the selected time interval. For instance, in some implementations, in response to receiving the input, the interface module **316** signals the traffic chart module **312** to receive/retrieve a show performance summary. The show performance summary may include information indexed by time interval, such the network, time, program, and average audience data provided in the corresponding columns of Table A above. For example, the traffic chart module **312**

31

processes the traffic reach/average audience as indexed by time interval of each of the first show and the one or more competing shows to produce a traffic chart, such as the traffic chart **204** or **804** discussed elsewhere herein.

In some implementations, the components of the visualization module **308** synchronously update a plurality of elements of the interface **322** using the performance summary such that a user may be able to drag a slider **216** (e.g., using the handle **220**) over a range of times, thereby selecting various time intervals and causing the interface module **316** to synchronously update one or more elements of the interface for those time intervals (e.g., the interfaces **322** and/or **822**).

FIG. **5** is a flowchart of an example method **500** of generating a dynamic user-interactable graphical interface using a performance summary for a first show and one or more competing shows.

At **502**, the meter module **314** generates a traffic meter that visually comparatively displays one or more inbound viewer rates and one or more outbound viewer rates corresponding to a time interval selected by a user using a virtual handle (e.g., the handle **220**) and, at **504**, the meter module **314** may generate a source comparison chart in association with the graphical traffic meter visually comparatively displaying the ranked list of inbound sources and ranked list of outbound sources for the selected time interval. In some instances, the meter module **314** processes the performance summary to determine inbound and outbound sources, rank the inbound and outbound sources, and/or determine what percentage of the total inbound or outbound traffic corresponds to each source. In other instances, the traffic module **334** performs these operations, while the meter module **314** receives/retrieves (e.g., via the data handler **310**) the lists of sources and determines the appropriate size, shape, content, and placement of the inbound sources list **210**, the outbound sources list **212**, and the traffic meter **208**. For example, the source comparison chart **260** may include an inbound sources list **210** and an outbound sources list **212** placed at opposing sides of the traffic meter **208** such that it appears as though those sources are feeding or being fed by the meter **208**, such as is displayed in FIGS. **2A-2F**.

At **506**, the traffic chart module **312** generates a traffic chart visually comparatively displaying a traffic rate of at least one of a first show and one or more competing shows using the average total number of viewers for each show. As described elsewhere herein, the traffic chart module **312** processes the show performance summary (e.g., as provided by the analytics server **330**) to generate and/or update the traffic chart **204**.

At **508**, the loss chart module **318** generates a traffic loss chart using total viewer loss percentages of a first show. In some implementations, the loss chart module **318** may process the show performance summary and/or access additional information stored on the data store **108** to determine and generate the elements of the traffic loss chart **206** as described in reference to FIGS. **2A-2F**. For example, the loss chart module **318**, in conjunction with the traffic module **334**, may determine a loss rate **238**, an average loss, and one or more standard deviations **246a** and **246b** at a plurality of time intervals, which the loss chart module **318** uses to generate a traffic loss chart **206**.

At **510**, the visualization module **308** generates visual overlays corresponding to commercials and including visual indicators comparing viewer traffic between shows at discrete time intervals. For example, the visualization module **308** may overlay visual overlays corresponding to commercial

32

occurrence data over one or more of the traffic chart **204** and the traffic loss chart **206**, as depicted in FIG. **2**.

In some implementations, the method **500** may be performed at page load, as real-time show performance summary data is received from the server **330**, and/or as user interactions with the dynamic user-interactable graphical interface are received and processed. For example, a selection received from a user (e.g., via an input device **114**) is detected by the interface module **316**, which in turn notifies the various components of the visualization module **308** (e.g., traffic chart module **312**, the meter module **314**, the loss chart module **318**) regarding the selection. The traffic chart module **312**, the meter module **314**, the interface module **316**, and/or the loss chart module **318** then process relevant data corresponding to the selection and update corresponding content regions (e.g., the traffic chart **204**; the traffic loss chart **206**; and the graphical traffic meter **208**, the ranked list of inbound sources **210**, the ranked list of outbound sources **212**, etc., as shown in FIGS. **2A-2F**; the traffic chart **804**, the traffic loss chart **806**, the media preview region **890**, etc., as shown in FIG. **8**, etc.) with data specifically associated with the input selection.

FIG. **6** is a flowchart of an example method **600** for generating an example show performance summary. At **602**, the aggregation module **332** may aggregate measurement data via a computer network from information sources including raw viewer traffic statistics for discrete time intervals of the first show. In some implementations, the aggregation module **332** receives raw viewer statistics or other measurement data from one or more information sources such as an audience measurement system(s) **340**. For instance, the example input data in the table above provides examples of raw viewer statistics and measurement data. The aggregation module **332** may then filter or augment the raw viewer statistics data to only the relevant data, filter the data to an appropriate date/time range, analyze (e.g., perform statistical analysis) or send the data for analysis (e.g., the traffic module **334**). Once the analysis has been performed, the aggregation module **332** may send the output. For instance, the example output data in the table above provides examples of the output of the aggregation module **332**. The appropriate date/time range may be determined by administrative settings, date/time specific to airing of the first show and/or competing shows, and/or as set by a user interaction with the interface **322**, as described herein.

At **604**, the traffic module **334** may determine one or more inbound viewer rates and one or more outbound viewer rates for each discrete time interval of at least first show and one or more competing shows using raw viewer traffic statistics, such as the input or output of the aggregation module **332**. At **606**, the traffic module **334** may determine viewer loss percentage for each discrete time interval using raw viewer traffic statistics. At **608**, the traffic module **334** may determine a ranked list of inbound sources for each different time interval of at least a first show from measurement data including a number or percentage of inbound viewers associated with each inbound source at time interval to which the ranked list corresponds. At **610**, the traffic module **334** may determine a ranked list of outbound sources for each different time interval of at least the first show from measurement data based on a number or percentage of outbound viewers associated with each outbound source at time interval to which the list corresponds. At **612**, the traffic module **334** may generate a show performance summary based on one or more of an inbound viewer rate, an outbound viewer rate, a viewer loss percentage, a ranked list of inbound sources, and/or a ranked list of outbound sources.

FIG. 7 is a flowchart of an example method 700 of displaying a show performance summary to a user in a useful and easily consumable way based on user input and/or a selected time interval. At 702, the interface module 316 receives from an input device an input; such as the selection of a time interval, a filter, a first show, etc. as described throughout this disclosure. At 704-712, the interface module 316 determines what type of input has been received and what that input indicates. Once the interface module 316 has received and interpreted the input, it signals various components of the visualization module 308 and/or analytics server 330 to cooperate to determine and provide an updated interface based on the input. In some implementations, the interface module 316 determines whether the input is a time interval selection at 704, a demographics filter selection at 706, a selection of a competing show at 708, a selection of a range of times at 710 (e.g., a selection of a time or to update the time selection in real time), or a selection of a video preview at 712.

In response to one or more of the determinations performed in steps 704-712, the interface module 316 updates one or more of the elements of the interface 322 or 822. In some implementations, as indicated in FIG. 7, the updating steps 714-722 occur synchronously thereby providing a fluid user experience where the user can easily analyze the performance of a first show and one or more competing shows at various time intervals and/or using various filters. For example, the traffic chart module 312 may update a traffic chart with information corresponding to the user input at 714. At 716, the loss chart module 318 may update a traffic loss chart with information corresponding the user input. At 718, the meter module 314 updates a graphical traffic meter to comparatively display an inbound viewer rate and outbound viewer rate corresponding to the user input. At 720, the meter module 314 updates a source comparison chart, viewer loss percentage, inbound ranked list, and/or outbound ranked list based on the user input. At 722, the media module 356 may update the media preview region 890 to include a media object corresponding to the selected time interval. For example, the components of the visualization module 308 may access the applicable data (e.g., as indexed by time interval) in the data store, which the components use to calculate and generate each element of at least the traffic chart, the traffic loss chart, the graphical traffic meter, and the source comparison chart, as described in more detail elsewhere herein.

In the above description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the present disclosure. However, it should be understood that the technology described herein can be practiced without these specific details. Further, various systems, devices, and structures are shown in block diagram form in order to avoid obscuring the description. For instance, various implementations are described as having particular hardware, software, and user interfaces. However, the present disclosure applies to any type of computing device that can receive data and commands, and to any peripheral devices providing services.

In some instances, various implementations may be presented herein in terms of algorithms and symbolic representations of operations on data bits within a computer memory. An algorithm is here, and generally, conceived to be a self-consistent set of operations leading to a desired result. The operations are those requiring physical manipulations of physical quantities. Usually, though not necessarily, these quantities take the form of electrical or magnetic signals capable of being stored, transferred, combined, com-

pared, and otherwise manipulated. It has proven convenient at times, principally for reasons of common usage, to refer to these signals as bits, values, elements, symbols, characters, terms, numbers, or the like.

It should be borne in mind, however, that all of these and similar terms are to be associated with the appropriate physical quantities and are merely convenient labels applied to these quantities. Unless specifically stated otherwise as apparent from the following discussion, it is appreciated that throughout this disclosure, discussions utilizing terms such as “processing,” “computing,” “calculating,” “determining,” “displaying,” or the like, refer to the action and methods of a computer system that manipulates and transforms data represented as physical (electronic) quantities within the computer system’s registers and memories into other data similarly represented as physical quantities within the computer system memories or registers or other such information storage, transmission or display devices.

A data processing system suitable for storing and/or executing program code (e.g., computer logic, such as software logic, hardware logic, etc.), such as the computing system and/or devices discussed herein, may include at least one processor coupled directly or indirectly to memory elements through a system bus. The memory(ies) elements can include local memory employed during actual execution of the program code, bulk storage, and cache memories that provide temporary storage of at least some program code in order to reduce the number of times code must be retrieved from bulk storage during execution. Input or I/O devices can be coupled to the system either directly or through intervening I/O controllers. The data processing system may include an apparatus may be specially constructed for the required purposes, or it may comprise a general-purpose computer selectively activated or reconfigured by a computer program stored in the computer.

The foregoing description has been presented for the purposes of illustration and description. It is not intended to be exhaustive or to limit the specification to the precise form disclosed. Many modifications and variations are possible in light of the above teaching. It is intended that the scope of the disclosure be limited not by this detailed description, but rather by the claims of this application. As will be understood by those familiar with the art, the specification may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. Likewise, the particular naming and division of the modules, routines, features, attributes, methodologies and other aspects may not be mandatory or significant, and the mechanisms that implement the specification or its features may have different names, divisions, and/or formats.

Furthermore, the modules, routines, features, attributes, methodologies and other aspects of the disclosure can be implemented as software, hardware, firmware, or any combination of the foregoing. The technology can also take the form of a computer program product accessible from a computer-usable or computer-readable medium providing program code for use by or in connection with a computer or any instruction execution system. Wherever a component, an example of which is a module or engine, of the specification is implemented as software, the component can be implemented as a standalone program, as part of a larger program, as a plurality of separate programs, as a statically or dynamically linked library, as a kernel loadable module, as firmware, as resident software, as microcode, as a device driver, and/or in every and any other way known now or in the future. Additionally, the disclosure is in no way limited to implementation in any specific programming language, or

35

for any specific operating system or environment. Accordingly, the disclosure is intended to be illustrative, but not limiting, of the scope of the subject matter set forth in the following claims.

What is claimed is:

1. A computer-implemented method comprising:
generating at a user device a dynamic user-interactable graphical interface using a performance summary including viewer traffic statistics for a first show and one or more competing shows at discrete time intervals of the first show and the one or more competing shows, the dynamic user-interactable graphical interface to graphically display a comparison of inbound and outbound viewer traffic between the first show and the one or more competing shows at the discrete time intervals;
providing the dynamic user-interactable graphical interface for display via a display device associated with the user device;
receiving from an input device associated with the user device a user input selecting from the dynamic user-interactable graphical interface a time interval of the first show and the one or more competing shows; and
updating the dynamic user-interactable graphical interface provided for display via the display device with the comparison of the viewer traffic between the first show and the one or more competing shows at the time interval selected by the user input.
2. The computer-implemented method of claim 1, wherein
generating the dynamic user-interactable graphical interface includes generating a virtual handle draggable within the dynamic user-interactable graphical interface by the user to isolate the viewer traffic associated with a certain discrete time interval from among the discrete time intervals of the viewer traffic, and
the time interval selected by the user input is the certain discrete time interval selected by the user using the virtual handle.
3. The computer-implemented method of claim 1, wherein
the performance summary includes an inbound viewer rate and an outbound viewer rate for each of the discrete time intervals of the first show,
generating the dynamic user-interactable graphical interface includes generating a graphical traffic meter that visually comparatively displays the inbound viewer rate and the outbound viewer rate corresponding to a selected time interval, and
updating the dynamic user-interactable graphical interface includes updating the graphical traffic meter to comparatively display the inbound viewer rate and the outbound viewer rate corresponding to the time interval selected by the user input.
4. The computer-implemented method of claim 3, wherein
the performance summary includes a ranked list of inbound sources for each of the discrete time intervals of the first show and a ranked list of outbound sources for each of the discrete time intervals of the first show,
generating the graphical traffic meter includes generating a source comparison chart in association with the graphical traffic meter that visually comparatively displays the ranked list of inbound sources and the ranked list of outbound sources for the selected time interval, and
updating the dynamic user-interactable graphical interface includes synchronously updating the graphical

36

- traffic meter and the source comparison chart based on the time interval selected by the user input.
5. The computer-implemented method of claim 3, wherein
the performance summary includes an average total number of viewers at each of the discrete time intervals for each of the first show and the one or more competing shows,
generating the dynamic user-interactable graphical interface includes generating a traffic chart using the average total number of viewers for each of the first show and the one or more competing shows, the traffic chart visually comparatively displaying a traffic rate of the first show to one or more traffic rates associated with the one or more competing shows, respectively, and
updating the dynamic user-interactable graphical interface includes synchronously updating the graphical traffic meter and the traffic chart with information corresponding to the selected time interval.
 6. The computer-implemented method of claim 3, wherein
the performance summary includes viewer loss percentages for each of the discrete time intervals of the first show,
generating the dynamic user-interactable graphical interface includes generating a traffic loss chart using the viewer loss percentages of the first show, and
updating the dynamic user-interactable graphical interface includes synchronously updating the graphical traffic meter and the traffic loss chart with information corresponding to the selected time interval.
 7. The computer-implemented method of claim 1, wherein
the performance summary includes commercial occurrence data reflecting one or more commercials presented during a showing of the first show and including one or more timestamps associated with the one or more commercials reflecting when the one or more commercials occurred, and
generating the dynamic user-interactable graphical interface includes generating one or more visual overlays corresponding to the one or more timestamps of the one or more commercials and including the one or more visual overlays in the comparison of the viewer traffic between the first show and the one or more competing shows at the discrete time intervals.
 8. The computer-implemented method of claim 1, further comprising:
aggregating measurement data via a computer network from one or more information sources, the measurement data including raw viewer traffic statistics for the discrete time intervals of the first show, the first show being viewable by viewers via one or more viewing platforms and being associated with a first content provider; and
generating using a server device or the user device the show performance summary based on the measurement data.
 9. The computer-implemented method of claim 8, wherein generating the show performance summary based on the measurement data includes
determining, using the raw viewer traffic statistics, an inbound viewer rate and an outbound viewer rate for each of the discrete time intervals of the first show, and one or more inbound viewer rates and one or more outbound viewer rates for each of the discrete time intervals of the one or more competing shows,

37

determining, using the raw viewer traffic statistics, a viewer loss percentage for each of the discrete time intervals,

determining, using the raw viewer traffic statistics, a ranked list of inbound sources for each of the discrete time intervals of the first show, the ranked list of inbound sources being ranked based on a number of inbound viewers associated with each of the inbound sources at a time interval to which the ranked list of inbound sources corresponds, and

determining, using the raw viewer traffic statistics, a ranked list of outbound sources for each of the discrete time intervals of the first show, the ranked list of outbound sources being ranked based on a number of outbound viewers associated with each of the outbound sources at a time interval to which the ranked list of outbound sources corresponds.

10. The computer-implemented method of claim 8, wherein aggregating the measurement data includes receiving the measurement data from the one or more information sources in real-time, near real-time, or delayed time.

11. The computer-implemented method of claim 8, wherein the one or more information sources include one or more of a third-party audience measurement service and an information system associated with the first content provider.

12. The computer-implemented method of claim 8, wherein the one or more viewing platforms include one or more of Internet-connected devices, over-the-air televisions, cable televisions, and satellite televisions.

13. The computer implemented method of claim 1, wherein generating the dynamic user-interactable graphical interface includes generating a show preview region, and updating the dynamic user-interactable graphical interface includes updating the show preview region with a media object corresponding to a portion of the show corresponding to the time interval selected by the user input.

14. A computing system comprising:

one or more processors;

a data handler executable by the one or more processors to receive a show performance summary including viewer traffic statistics for a first show and one or more competing shows at discrete time intervals of the first show and the one or more competing shows;

a visualization module executable by the one or more processors to generate a dynamic user-interactable graphical interface using the performance summary and provide the dynamic user-interactable graphical interface for display via a display device, the dynamic user-interactable graphical interface being configured to graphically display a comparison of viewer traffic between the first show and the one or more competing shows at the discrete time intervals;

an interface module executable by the one or more processors to receive from an input device a user input selecting from the dynamic user-interactable graphical interface a time interval of the first show and the one or more competing shows, the interface module being coupled to the visualization module to provide the user input to the visualization module; and

the visualization module being further executable by the one or more processors to update the dynamic user-interactable graphical interface provided for display via the display device with the comparison of the viewer traffic between the first show and the one or more competing shows at the time interval selected by the user input.

38

15. The system of claim 14, wherein the visualization module is further executable by the one or more processors to generate a virtual handle draggable within the dynamic user-interactable graphical interface by the user to isolate the viewer traffic associated with a certain discrete time interval from among the discrete time intervals of the viewer traffic, and the time interval selected by the user input is the certain discrete time interval selected by the user using the virtual handle.

16. The system of claim 14, wherein

the performance summary includes an inbound viewer rate and an outbound viewer rate for each of the discrete time intervals of the first show, and

the visualization module includes a traffic chart module executable by the one or more processors to

generate a graphical traffic meter that visually comparatively displays the inbound viewer rate and the outbound viewer rate corresponding to a selected time interval, the dynamic user-interactable graphical interface including the graphical traffic meter, and

update the dynamic user-interactable graphical interface by updating the graphical traffic meter to comparatively display the inbound viewer rate and the outbound viewer rate corresponding to the time interval selected by the user input.

17. The system of claim 16, wherein

the performance summary includes a ranked list of inbound sources for each of the discrete time intervals of the first show and a ranked list of outbound sources for each of the discrete time intervals of the first show, and

the meter module is further executable by the one or more processors to

generate a source comparison chart in association with the graphical traffic meter that visually comparatively displays the ranked list of inbound sources and the ranked list of outbound sources for the selected time interval, the dynamic user-interactable graphical interface including the source comparison chart, and

update the dynamic user-interactable graphical interface by synchronously updating the graphical traffic meter and the source comparison chart based on the time interval selected by the user input.

18. The system of claim 16, wherein

the performance summary includes an average total number of viewers at each of the discrete time intervals for each of the first show and the one or more competing shows, and

the visualization module includes a traffic chart module executable by the one or more processors to

generate a traffic chart using the average total number of viewers for each of the first show and the one or more competing shows, the traffic chart visually comparatively displaying a traffic rate of the first show to one or more traffic rates associated with the one or more competing shows, respectively, the dynamic user-interactable graphical interface including the traffic chart, and

update the dynamic user-interactable graphical interface includes synchronously updating the graphical traffic meter and the traffic chart with information corresponding to the selected time interval.

39

19. The system of claim 16, wherein the performance summary includes viewer loss percentages for each of the discrete time intervals of the first show, the visualization module includes a loss chart module 5 executable by the one or more processors to generate a traffic loss chart using the viewer loss percentages of the first show, the dynamic user-interactable graphical interface including the traffic loss chart, and 10 update the dynamic user-interactable graphical interface includes synchronously updating the graphical traffic meter and the traffic loss chart with information corresponding to the selected time interval.

20. The system of claim 14, wherein the performance summary includes commercial occurrence data reflecting one or more commercials presented during a showing of the first show and including one or more timestamps associated with the one or more commercials reflecting when the one or more 20 commercials occurred, and the visualization module is further executable by the one or more processors to generate one or more visual overlays corresponding to the one or more timestamps of the one or more commercials and including the one or more visual overlays in the comparison of the viewer traffic between the first show and the one or more competing shows at the discrete time intervals. 25

21. The system of claim 14, further comprising: an impression aggregator executable by the one or more 30 processors to aggregate measurement data via a computer network from one or more information sources, the measurement data including raw viewer traffic statistics for the discrete time intervals of the first show, the first show being viewable by viewers via one or more viewing platforms and being associated with a first content provider; and 35 a traffic module executable by the one or more processors to generate the show performance summary based on the measurement data. 40

22. The system of claim 14, wherein to generate the show performance summary based on the measurement data includes 45 determining, using the raw viewer traffic statistics, an inbound viewer rate and an outbound viewer rate for each of the discrete time intervals of the first show, and one or more inbound viewer rates and one or more outbound viewer rates for each of the discrete time intervals of the one or more competing shows, 50 determining, using the raw viewer traffic statistics, a viewer loss percentage for each of the discrete time intervals, determining, using the raw viewer traffic statistics, a ranked list of inbound sources for each of the discrete time intervals of the first show, the ranked list of 55 inbound sources being ranked based on a number of inbound viewers associated with each of the inbound

40

sources at a time interval to which the ranked list of inbound sources corresponds, and determining, using the raw viewer traffic statistics, a ranked list of outbound sources for each of the discrete time intervals of the first show, the ranked list of outbound sources being ranked based on a number of outbound viewers associated with each of the outbound sources at a time interval to which the ranked list of outbound sources corresponds.

23. The system of claim 21, wherein to aggregate the measurement data includes receiving the measurement data from the one or more information sources in real-time, near real-time, or delayed time.

24. The system of claim 21, wherein the one or more information sources include one or more of a third-party audience measurement service and an information system associated with the first content provider.

25. The system of claim 21, wherein the one or more viewing platforms include one or more of Internet-connected devices, over-the-air televisions, cable televisions, and satellite televisions.

26. The system of claim 14, wherein generating the dynamic user-interactable graphical interface includes generating a show preview region, and updating the dynamic user-interactable graphical interface includes updating the show preview region with a media object corresponding to the time interval selected by the user input.

27. A computing system comprising:

one or more hardware processors; and

one or more memories storing instructions, which when executed by the one or more hardware processors, cause the system to perform operations comprising: generating at a user device a dynamic user-interactable graphical interface using a performance summary including viewer traffic statistics for a first show and one or more competing shows at discrete time intervals of the first show and the one or more competing shows, the dynamic user-interactable graphical interface to graphically display a comparison of inbound and outbound viewer traffic between the first show and the one or more competing shows at the discrete time intervals;

providing the dynamic user-interactable graphical interface for display via a display device associated with the user device;

receiving from an input device associated with the user device a user input selecting from the dynamic user-interactable graphical interface a time interval of the first show and the one or more competing shows; and

updating the dynamic user-interactable graphical interface provided for display via the display device with the comparison of the viewer traffic between the first show and the one or more competing shows at the time interval selected by the user input.

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